AUTHENTICATED
U.S. GOVERNMENT
INFORMATION
GPO

S. HRG. 108–749

PROVIDING SUBSTANCE ABUSE PREVENTION AND TREATMENT SERVICES TO ADOLESCENTS

HEARING

BEFORE THE

SUBCOMMITTEE ON SUBSTANCE ABUSE AND
MENTAL HEALTH SERVICES

OF THE

COMMITTEE ON HEALTH, EDUCATION,
LABOR, AND PENSIONS
UNITED STATES SENATE

ONE HUNDRED EIGHTH CONGRESS

SECOND SESSION

ON

EXAMINING SUBSTANCE ABUSE PREVENTION AND TREATMENT SERVICES FOR ADOLESCENTS, FOCUSING ON THE EFFECTS OF BINGE DRINKING, AND MONTHLY CIGARETTE, BEER, AND MARIJUANA USAGE, AND THE DEVELOPMENTS OF THE JUVENILE TREATMENT NETWORK

JUNE 15, 2004

Printed for the use of the Committee on Health, Education, Labor, and Pensions

U.S. GOVERNMENT PRINTING OFFICE
94–384 PDF WASHINGTON : 2005

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS

JUDD GREGG, New Hampshire, *Chairman*

BILL FRIST, Tennessee
MICHAEL B. ENZI, Wyoming
LAMAR ALEXANDER, Tennessee
CHRISTOPHER S. BOND, Missouri
MIKE DEWINE, Ohio
PAT ROBERTS, Kansas
JEFF SESSIONS, Alabama
JOHN ENSIGN, Nevada
LINDSEY O. GRAHAM, South Carolina
JOHN W. WARNER, Virginia

EDWARD M. KENNEDY, Massachusetts
CHRISTOPHER J. DODD, Connecticut
TOM HARKIN, Iowa
BARBARA A. MIKULSKI, Maryland
JAMES M. JEFFORDS (I), Vermont
JEFF BINGAMAN, New Mexico
PATTY MURRAY, Washington
JACK REED, Rhode Island
JOHN EDWARDS, North Carolina
HILLARY RODHAM CLINTON, New York

SHARON R. SODERSTROM, *Staff Director*
J. MICHAEL MYERS, *Minority Staff Director and Chief Counsel*

SUBCOMMITTEE ON SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES

MIKE DEWINE, Ohio, *Chairman*

MICHAEL B. ENZI, Wyoming
JEFF SESSIONS, Alabama
JOHN ENSIGN, Nevada

EDWARD M. KENNEDY, Massachusetts
JEFF BINGAMAN, New Mexico
JACK REED, Rhode Island

KARLA CARPENTER, *Staff Director*
DAVID NEXON, *Minority Staff Director*

C O N T E N T S

STATEMENTS

TUESDAY, JUNE 15, 2004

Page

DeWine, Hon. Mike, a U.S. Senator from the State of Ohio, opening statement 1
Reed, Hon. Jack, a U.S. Senator from the State of Rhode Island, opening statement 2
Kennedy, Hon. Edward M., a U.S. Senator from the State of Massachusetts, prepared statement 3
Curie, Charles G., Administrator, Substance abuse and Mental Health Services Administration, U.S. Department of Health and Human Services 5
  Prepared statement 7
Brown, Sandra A., Professor of Psychology and Psychiatry, University of California-San Diego; Chief of Psychology Services, Veterans Affairs San Diego Health Care Systems; Associate Director, Child and Adolescent Services Research Center, Children's Hospital of San Diego; Roger Weissberg, Department of Psychology, University of Illinois at Chicago, Executive Director, Collaborative for Academic, Social and Emotional Learning; Rhonda Ramsey-Molina, President and CEO, Coalition for a Drug-Free Greater Cincinnati; Ronald Anton, Director of Juvenile Justice and Community Programs, Day One; and Kris Shipley, Pasadena, MD 17
  Prepared statements of:
    Sandra A. Brown 19
    Roger P. Weissberg, Ph.D. 51
    Rhonda Ramsey-Molina 59
    Ronald Anton 65
    Kris Shipley 112

ADDITIONAL MATERIAL

Statements, articles, publications, letters, etc.:
  Adolescence and The Trajectory of Alcohol Use: Basic to Clinical Studies . 23
  Neurocognitive Functioning of Adolescents: Effects of Protracted Alcohol Use 30
  Neural Response to Alcohol Stimuli in Adolescents With Alcohol Use Disorder 41
  Norman G. Hoffmann, Ph.D. Ana M. Abrantes, Ph.D. and Ronald Anton, LCPC, LADC, MAC 70
  Juvenile Automated Substance Abuse Evaluation (JASAE) 77
  Practical Adolescent Dual Diagnostic Interview (PADDI) 107
  The Alliance for Consumer Education (ACE) 122
  Mary Melton, Ph.D., MBA 125

PROVIDING SUBSTANCE ABUSE PREVENTION AND TREATMENT SERVICES TO ADOLESCENTS

TUESDAY, JUNE 15, 2004

U.S. SENATE,
SUBCOMMITTEE ON SUBSTANCE ABUSE AND MENTAL HEALTH
SERVICES, OF THE COMMITTEE ON HEALTH, EDUCATION,
LABOR AND PENSIONS,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:17 a.m., in room SD–430, Dirksen Senate Office Building, Hon. Mike DeWine (chairman of the subcommittee) presiding.

Present: Senators DeWine and Reed.

OPENING STATEMENT OF SENATOR DEWINE

Senator DEWINE. Our hearing will come to order.

Thank you all for being here today. My colleague, Senator Reed from Rhode Island, will be here in a moment. Let me thank him for his continued dedication to issues affecting children and adolescents. Senator Reed is certainly a great advocate for youth in need.

Today, we are meeting to talk about substance abuse prevention and treatment issues concerning adolescents. We all know that alcohol and drug abuse and dependence represent major problems for young people in this country. Providing effective services to adolescents is particularly challenging. Despite the best efforts across the field, much remains to be learned about the types and mix of services and strategies that are most effective in preventing and treating youth with alcohol and drug problems.

Some data highlight this challenge: the most recent information we have from the National Household Survey on Drug Use and Health shows that 11.6 percent of youth aged 12 to 17 currently use illegal drugs; 20.2 percent of those aged 18 to 25 currently use illegal drugs. Marijuana is the drug used by the majority of these young people.

Of those aged 12 to 20, 28.8 percent are current alcohol users, with 19.3 percent of this age group having binged within the last month—that is defined as five or more drinks on a single occasion—while 6.2 percent can be considered heavy drinkers.

Research has shown that prevention can be very effective. Comprehensive, community-based approaches, combining individually focused strategies with more "environmental" approaches, have yielded very positive results in communities around the country.

Yet, as we can see in the data I just mentioned, we have a lot of work to do.

If our prevention efforts fail, we must provide treatment services to address substance abuse among our youth. Yet, the Household Survey reveals a crisis in this area as well. For example, 2.3 million youth aged 12 to 17, (9.1 percent of that total age group) needed treatment, yet only 187,000 (8 percent of the total) received services.

Clearly, we need to do much better. I am glad to say that there is some good news. Results from the 2003 monitoring and future surveys show an 11 percent decline in drug use by 8th, 10th and 12th grade students over the past 2 years. This decline correlates with data showing a shift in youth attitudes about drug use. The perceived risk of using drugs, especially marijuana, continues to increase among youth.

As important as our focus on illegal drugs is and must continue to be, we know that alcohol is the primary substance of abuse among young people and that it is a contributor to the three leading causes of death among this population: unintentional injuries, such as traffic crashes, homicide, and suicide.

The annual societal cost of underage drinking has been estimated at over $50 billion per year. That is why I am working with Senator Dodd and five members of the House on a bipartisan, bicameral bill specifically addressing underage drinking prevention. We hope to introduce that bill soon.

Further research now is showing that substance abuse and dependence among our youth can be characterized as a developmental disorder. The prevalence of alcohol and drug dependence actually peaks in the 18 to 25 age group, and of course, a co-occurrence of major mental health disorders such as depression and bipolar disorder is also an important factor as well.

With this important challenge, we must act on what these data tell us. Research must continue to search for answers and services based on what we have learned from that research must receive adequate funding. If we fail our youth in their developmental years, we may be condemning them to a life of difficulty and lowered expectations.

That is why I am committed to doing what I can to prevent that from happening. I believe that from this hearing, we can learn more specifically what the state-of-the-art is in adolescent prevention and treatment. I believe we also can learn the important gaps in our knowledge, the particular challenges and difficulties faced by government, providers, communities and families and what we might do to assist or facilitate in developing a broader, more effective system focusing on adolescents' needs.

Let me at this point turn to Senator Reed for any opening comments.

OPENING STATEMENT OF SENATOR REED

Senator REED. Thank you very much, Mr. Chairman. Let me again commend you for holding this hearing.

You and your staff have been scheduling some very important and very significant hearings, and I thank you for the opportunity to participate. As we all know, the problem of adolescent substance abuse is a grave one. Nearly 20 million children age 12 and older are currently using illicit drugs. This represents almost 10 percent of the adolescent population, and when we factor in the presence of comorbid conditions such as depression in these children, these statistics are staggering.

The issue here is not simply that so many adolescents are affected but that we are doing so little to help the vast majority of these children. On average, States are only able to treat 8 percent of those in need of substance abuse services. Access to care is a critical issue for these adolescents.

In Rhode Island, as in most communities in this country, a lack of providers, combined with limited substance abuse treatment programs and virtually nonexistent residential treatment facilities has left families with nowhere to turn. Some families in Rhode Island are forced to travel as far as Arizona and Maine because they cannot get their children into a suitable residential treatment facility in our own State.

A particularly alarming finding is the lack of services for youth transitioning out of juvenile justice facilities and back into the community. Despite substantial evidence that as many as 60 percent of juvenile offenders have a substance abuse problem, and despite evidence that proper treatment reduces recidivism by as much as 75 percent, this high risk population is left largely untreated.

In the past, we did not comprehend the prevalence of substance abuse by our adolescents, and we certainly did not know how to help these children. Today, however, we have made great strides at understanding these illnesses. We have developed effective treatments, and we now can help many of these children to live much better lives.

Although more research and medical advancement are always needed, we must act to help youngsters currently coping with substance abuse problems. I look forward to the panel's testimony, and I thank the chairman again for holding this hearing.

Thank you, Mr. Chairman.

Senator DEWINE. At this time I would like to submit Senator Kennedy's statement for the record.

[The prepared statement of Senator Kennedy follows:]

PREPARED STATEMENT OF SENATOR EDWARD M. KENNEDY

One of our major priorities in this committee is to do more to see that all children in communities have access to vital health services. Preventing and treating substance abuse addiction is an essential part of protecting their potential to succeed and lead productive lives.

On some health issues, the Federal, State and local response has produced significant progress. We can see the results in lower smoking rates and in other quantifiable ways. But alcohol and drug use continue to plague our communities, especially college communities.

Adults who began alcohol, tobacco or drug use before the age of 21 are far more likely to become addicted. The number of young people who initiate drug use at a very early age is alarming. In Massachusetts, according to a recent study, 20 percent of youth had their first cigarette, 28 percent had their first alcoholic drink, and 12 percent had used marijuana before turning 13. Nationally, one in five persons from ages 12 to 20 had engaged in binge drinking.

Reaching children and adolescents effectively means more than just making contact. It means providing prevention services that are science-based and effective. It means following up with later sessions, so the lessons won't be lost. And it means involving schools, families and local agencies in prevention efforts.

Schools are particularly important, because children are most accessible there. Yet few schools use proven and effective prevention curricula. Instead, they typically rely on a patchwork of programs with no consistent approach.

Interactive programs specifically tailored to a school's demographics are highly effective. Programs focused on single drugs are more effective than general anti-drug programs. If we build on proven approaches, we can have a nation-wide initiative to make the best prevention practices available to every school in the country.

On treatment, we're still learning what works, but we know we have to involve communities more effectively in the effort—from schools, to law enforcement to health providers. Research is needed on what interventions work best. The goal is to have individualized and age-appropriate treatment for every child and adolescent who needs it. If necessary, treatment for substance abuse should go hand in hand with treatment for emotional disorders. Treating one without the other means almost certain failure. Screening and assessing are important too, so that youths are less likely to be overlooked.

Recovery has to be the goal for anyone with an identified addiction. Again, building on best practice models across the country, we can end the shameful nationwide disparities that exist today and make our goals a reality for far more students.

We'll hear today from Administrator Charles Curie of the Substance Abuse and Mental Health Services Administration, which is coordinating the Federal response through its block grant and other programs. The continuum of care provided under those programs can change lives in every State.

We'll also hear today from academic experts, from hands-on program directors, and from a brave former consumer who can speak to these and other issues.

I thank all of our witnesses and I look forward to their testimony.

Senator DEWINE. For our first panel this morning, I would like to introduce Charles Curie, Administrator of the Substance Abuse and Mental Health Services Administration. He has served in this role since October 2001. He reports directly to Health and Human Services Secretary Tommy Thompson and leads the $3.2 billion agency responsible for improving the accountability, capacity and effectiveness of our Nation's substance abuse prevention, addictions treatment and mental health services.

Good to see you again.

STATEMENT OF CHARLES CURIE, ADMINISTRATOR, SUBSTANCE ABUSE AND MENTAL HEALTH SERVICES ADMINISTRATION, U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

Mr. CURIE. Good to see you, Mr. Chairman.

Senator DEWINE. Thank you very much.

Mr. CURIE. Thank you so much, and thank you, Senator Reed, as well, for this opportunity today. As you said, I am Charles Curie, the Administrator of what is known as SAMHSA in the Department of Health and Human Services, and I do request that my formal written testimony be submitted to the record.

Senator DEWINE. That will be made a part of the record.

Mr. CURIE. Thank you.

Again, today, we have an opportunity to describe how we are working together to provide effective substance abuse treatment to people who want and need it, including young Americans. Drug abuse, as you have both indicated, is a major public health problem. Overall, there are an estimated 22 million Americans aged 12 and older struggling with a drug or alcohol problem.

Among adults 18 and older with a serious substance abuse problem, again, just over 20 percent have a co-occurring serious mental illness. Addiction often begins during childhood and adolescence, and research shows that while substance abuse was once thought to be an adult onset disease, as you indicated in your remarks, Mr. Chairman, it actually is a developmental disease. And there is a clear correlation between the age of first use of drugs and alcohol and the potential for developing a serious problem.

For example, one-third, 2.3 million, of alcohol-dependent adults aged 21 or older in 2002 had first used alcohol before the age of 14. Over 80 percent, 5.8 million, had first used alcohol before they were aged 18, and 96 percent, 6.6 million, had first used alcohol before the age of 21.

The rate of dependence for those who first drank at age 21 or older was only 1 percent. Conversely, 99 percent of adults 21 or older who first drank alcohol at 21 or older do not have a dependence problem. It is plain to see why improving treatment services for adolescents and ratcheting up prevention programs targeted at this age group are top priorities for SAMHSA.

During my tenure, we have restructured our work around the vision of a life in the community for everyone, and our mission, building resilience and facilitating recovery. To focus and guide our program development and resources, we have developed a matrix of program priorities and cross-cutting management principles. Two priorities I want to highlight for you are prevention and treatment of adolescent substance abuse.

On our matrix, you will see Strategic Prevention Framework. Through this framework, we are working to more effectively and efficiently align our prevention resources. Fortunately, we know more about what works in prevention, education and treatment than ever before. Over the years, we have shown that prevention programs can and do produce results. Currently, we have 60 model programs listed in our National Registry of Effective Programs. These programs yield an average of a 25 percent reduction in substance use.

To help provide a structured approach to prevention that is based on the best that science has to offer, Secretary Thompson launched SAMHSA's Strategic Prevention Framework during the National Healthier U.S. Prevention Summit in Baltimore on April 29th. This new $45 million competitive grant program will enable States, territories and the District of Columbia to bring together multiple funding streams from multiple sources to create and sustain a community-based, science-based approach to substance abuse prevention and mental health prevention and promotion.

In the area of substance abuse treatment, this year, we launched the President's Access to Recovery program with a $100 million investment. The administration's commitment to expand clinical treatment and recovery support services to reach those in need extends beyond the immediate fiscal year.

Our 2005 request doubles Access to Recovery's appropriation to $200 million and increases the Substance Abuse Prevention and Treatment Block Grant by $53 million, for a total of $1.8 billion. Critically, Access to Recovery provides States the opportunity, if they choose, to target resources to providing treatment for adolescents. We also support treatment for adolescents through our Targeted Capacity Expansion Grants.

Each of our efforts, whether through the block grant, Targeted Capacity Expansion or Access to Recovery to expand treatment for adolescents are based on the undeniable need. Key to achieving our goals is developing an ability to report on meaningful outcomes. These outcome measures must be concise, purposeful and useful. They must get real outcomes for real people. We are changing the emphasis from how did you spend the money, and did you spend the money according to the rules, to how did you put your dollars to work, and how did your consumers benefit.

Through an internal data strategy work group, we are conducting an examination of our data collection and analysis systems, and a central component is the development of national outcomes. Through collaboration with the States, we have identified a key set of domains or national outcomes. These domains are, one, abstinence from drug use and alcohol abuse or decreased symptoms from mental illness; two, increased or retained employment and school enrollment; three, decreased involvement with the criminal justice system; four, increased ability in family and housing conditions; five, increased access to services; six, increased retention in services; and seven, increased social connectedness to family, friends and coworkers.

These national outcomes ultimately will be aligned across all of SAMHSA's programs, including Access to Recovery, the Community Mental Health Services Block Grant and Substance Abuse Prevention and Treatment Targeted Capacity Expansion Grants.

We do know, based on our experience that prevention works, treatment works. And it helps people triumph over addiction and leads to recovery. Mr. Chairman and Members of the Committee, thank you for the opportunity to appear today. I will be pleased to answer any questions you may have.

[The prepared statement of Mr. Curie follows:]

PREPARED STATEMENT OF CHARLES G. CURIE, M.A., A.C.S.W.

Mr. Chairman and Members of the Subcommittee, good morning. I am Charles G. Curie, Administrator of the Substance Abuse and Mental Health Services Administration (SAMHSA), part of the U.S. Department of Health and Human Services (HHS).

Thank you for providing me the opportunity to describe how SAMHSA and our Federal, State, and local community-level partners are working to provide effective substance abuse treatment to people who want and need it, including young Americans.

Drug abuse and mental illness are major public health problems that affect us all. In terms of dollars, substance abuse, including alcohol, illicit drugs, and tobacco use, costs our Nation more than $484 billion per year. The economic costs of mental illness are also staggering. The President's New Freedom Commission on Mental Health reports the cost in the U.S. from both direct (treatment-related) and indirect (productivity loss) expenses may exceed $150 billion per year with rapid annual increases, especially in the drug treatment area. Mental illnesses, including depression, account for four of the top six causes of disability among 15–44 year olds in the Western world.

Although not as well known as the deaths due to substance abuse, mental illnesses are a substantial source of mortality. Of the 30,000 Americans who die by suicide each year, 90 percent have a mental illness. The fact that deaths from suicide outnumber deaths from homicide (18,000) is often a surprising finding. Suicide rates are high among several ethnic minority groups, though it remains highest in older white males. Between 1952 and 1992, the incidence of suicide among adolescents and young adults nearly tripled; currently it is the third-leading cause of death in adolescents. We know that substance use increases the probability of a person with mental illness attempting suicide and increases the person's likelihood of succeeding.

Addiction's toll on individuals, their families, and the communities they live in is a cumulative devastation with a ripple effect. This ripple effect leads to costly social and public health problems including HIV/AIDS, domestic violence, child abuse, and crime in general, as well as accidents and teenage pregnancies.

Addiction often begins during childhood and adolescence. Research has shown that substance use dependence, while once thought to be an adult-onset disease, is actually a "developmental disease." It is developmental in terms of having its start during the early stages of adolescence and even childhood, when children use drugs or consume alcohol. The introduction of an illicit drug or of alcohol to the adolescent brain has a dramatic impact because of the changes occurring in the brain during this developmental stage.

The data from SAMHSA's 2002 National Survey on Drug Use and Health provides the scope of the problem. In 2002, there were 2.3 million youths aged 12 to 17 who needed treatment for an alcohol or illicit drug problem. Of this group, only 186,000 received treatment. Without help, it is very likely that these young people, at the very beginning of their lives, will continue on a destructive path of addiction, disability, criminal involvement, and premature death.

Overall, there are an estimated 22 million Americans struggling with a drug or alcohol problem. There is a clear correlation between age of first use of drugs and alcohol and the potential for developing a serious problem. For example, in 2000, 18 percent of people age 26 and older who had begun using marijuana before age 15 met the criteria for either dependence or abuse of alcohol or illicit drugs, compared to 2.1 percent of adults who never used marijuana. Among *past year users* of marijuana age 26 and older who had first used marijuana before age 15, 40 percent met the criteria for either dependence or abuse of alcohol or illicit drugs.

The story is very similar for alcohol. One-third, 2.3 million, of alcohol-dependent adults age 21 or older in 2002, had first used alcohol before age 14. Over 80 percent, 5.8 million, had first used before they were age 18. And 96 percent, 6.6 million, had first used before age 21. The rate of dependence for those who first drank at age 21 or older was only 1 percent. Conversely, 99 percent of adults 21 and older who first drank alcohol at age 21 or older do not have a dependence problem.

It is plain to see why improving treatment services for adolescents and bolstering prevention programs targeted to this age group are top priorities for SAMHSA.

THE SAMHSA ROLE

SAMHSA is working to improve how we approach substance abuse treatment and prevention, not only at the Federal level, but also at the State and community levels. During my tenure, we have restructured our work around the vision of "a life in the community for everyone" and our mission of "building resilience and facilitating recovery."

To focus and to guide our program development and resources, we have developed a Matrix of program priorities and cross cutting principles that pinpoints SAMHSA's leadership and management responsibilities. These responsibilities were developed as a result of discussions with Members of Congress, our advisory councils, constituency groups, people working in the field, and people working to attain and sustain recovery.

The Matrix priorities are also aligned with the priorities of President Bush and HHS Secretary Tommy Thompson, whose support for our vision of a life in the community for everyone we appreciate. The Matrix has produced concrete results by focusing SAMHSA staff and the field on planting a few "redwoods" rather than letting "a thousand flowers bloom." I see my responsibility as Administrator to make solid program and management improvements that will last beyond my tenure.

I am proud of our success over the past 2½ years since I came to SAMHSA. I believe the SAMHSA Matrix is the underpinning of our success and has helped us to focus on solid investments in the future of mental health and substance abuse prevention and treatment services. In particular, I will highlight the ways we support the prevention and treatment of adolescent substance abuse.

On our matrix you will see the program "Strategic Prevention Framework." Through this Framework we are working to more effectively and efficiently align our prevention resources. The Framework is aligned with the President's and Secretary Thompson's HealthierUS initiative. HealthierUS is a plan to improve overall public health by capitalizing on the power of prevention to help prevent, delay, and/or reduce disability from chronic disease and illnesses, including substance abuse and mental illnesses.

I am pleased to report that the most recent data confirms that the President's 2-year goal to reduce illicit drug use among youth by 10 percent in 2 years has been exceeded, with an 11 percent reduction in the past 2 years. This is a clear indication that our work with our many Federal and State partners, along with schools, parents, teachers, law enforcement, religious leaders, and local community anti-drug coalitions, is paying off. But our work is far from over, and prevention is key.

Fortunately, we know more about what works in prevention, education, and treatment than ever before. Over the years, we have shown prevention programs can and do produce results. Currently, we have 60 model programs listed in our National Registry of Effective Programs. These programs yield, on average, a 25 percent reduction in substance use and affect a broad range of behavioral issues, from violence and delinquency to emotional problems. Primary access to the programs in the Registry is through the SAMHSA Model Programs website. The website describes and provides contact information for each of the programs in the Registry (www.modelprograms.samhsa.gov).

Unfortunately, as we all know, individuals, communities, or State and Federal agencies do not always translate, or make it easy to translate, into action what is known about prevention. To help provide a structured approach to substance abuse prevention and mental health promotion that is based on the best that science has to offer, Secretary Thompson launched the Strategic Prevention Framework during the national HealthierUS Prevention Summit in Baltimore on April 29. This new $45 million competitive grant program will enable States, Territories, and the District of Columbia to bring together multiple funding streams from multiple sources to create and sustain a community-based, science-based approach to substance abuse prevention and mental health promotion.

The Framework is based on the risk and protective factor approach to prevention. For example, family conflict, low school readiness, and poor social skills increase the risk for conduct disorders and depression, which in turn increase the risk for adolescent substance abuse, delinquency, and violence. Protective factors such as strong family bonds, social skills, opportunities for school success, and involvement in community activities can foster resilience and mitigate the influence of risk factors.

Clearly, these risk and protective factors exist at several levels—at the individual level, the family level, in schools, the community level, and in the broader environment. People working in communities with young people and adults understand the need to create an approach to prevention that is citizen centered, cuts across existing programs and system levels, and has common outcome measures.

Just as when we are promoting exercise and a healthy diet or advancing vaccination, when we speak about abstinence or rejecting drugs, tobacco, and alcohol and promote mental health, we really are all working towards the same objective—reducing risk factors and promoting protective factors. The challenge is to build a national framework for prevention on that common foundation.

Moving the framework from vision to practice will require the Federal government, States, and communities to work in partnership. Under the new grant program, States will provide leadership, technical support, and monitoring to ensure that participating communities are successful in implementing a five-step public health process that will promote youth development, reduce risk-taking behaviors, build assets and resilience, and prevent problem behaviors across the life span. The five steps are:

First, communities assess their mental health and substance abuse-related problems including magnitude, location, and associated risk and protective factors. Communities also assess assets and resources, service gaps, and readiness.

Second, communities must engage key stakeholders, build coalitions, and organize, train, and leverage prevention resources.

Third, communities establish plans that include strategies for organizing and implementing prevention resources. They must be based on documented needs, build on identified resources, and set baselines, objectives, and performance measures.

Fourth, communities implement evidence-based prevention efforts specifically designed to reduce risk and promote protective factors identified.

Finally, communities will monitor and report outcomes to assess program effectiveness and service delivery quality, and to determine if objectives are being attained or if there is a need for correction.

The success of the Strategic Prevention Framework will be measured by specific national outcomes that are true measures of whether our programs are helping young people achieve our vision of a life in the community, for example, whether they are in stable homes, in school, and are not involved with the criminal justice system. We are rapidly moving to implement these national outcomes across all of SAMHSA's programs.

In the area of substance abuse treatment, we are already using National outcomes. This year we commenced the President's Access to Recovery program with a $100 million investment. The Administration's commitment to expand clinical treatment and recovery support services to reach those in need extends beyond the immediate fiscal year, with its fiscal year 2005 request to double Access to Recovery's appropriation to $200 million and to increase the Substance Abuse Prevention and Treatment Block Grant by $53 million for a total of $1.8 billion.

As you may know, Access to Recovery is based on the knowledge that there are many pathways to recovery. It empowers people with the ability to choose the path best for them—whether it is physical, mental, medical, emotional, or spiritual. In particular, we know that for many Americans, treatment services that build on spiritual resources are critical to recovery. Access to Recovery ensures a full range of clinical treatment and recovery support services are available, including the transforming powers of faith. Critically, Access to Recovery provides States the opportunity to target resources to providing treatment to adolescents.

Over the years, SAMHSA, through its Center for Substance Abuse Treatment (CSAT), has made significant strides in addressing the shortage of adolescent substance abuse treatment. Between 1970 and 1997, there were only 14 published studies of the effectiveness of adolescent substance abuse treatment. In response, SAMHSA funded the Cannabis Youth Treatment (CYT) Study in 1997. Its purpose was to explore whether proven adult models of intervention could be made developmentally appropriate for adolescents and achieve effective outcomes in real-world, community-based treatment settings. The CYT study of over 600 youth randomized to five different treatment interventions resulted in five effective treatment protocols that are now available in manuals that are in use across the country. The five volumes of the CYT Series are based on treatment approaches specifically designed for use with adolescents. The CYT manuals are part of SAMHSA's larger Science to Services Initiative that is working to speed the delivery of effective, evidence-based programs into communities where clinical intervention and treatments are put into practice.

In 1999, a few years after the CYT study began, SAMHSA funded the Adolescent Treatment Models program. The purpose was to identify potentially exemplary programs that existed in the field and to have them rigorously evaluated to determine their effectiveness. The same core assessment and follow-up instruments, as well as data collection points from CYT, were used, which afforded the opportunity to draw critical comparisons. The outcomes of this study generated 10 treatment program manuals that include effective programs for intensive outpatient, short-term residential and long-term residential programs that are available on-line and are being adopted within the adolescent treatment field as we speak.

Having worked to identify effective treatment interventions, SAMHSA proceeded to develop the Strengthening Communities—Youth (SCY) program in 2001. With a

$39 million investment, twelve sites were funded for 5 years to develop a continuum of adolescent services and a system of care for youth within their communities.

Although these programs have clearly and undoubtedly strengthened treatment programs for this age group, an identified weakness is the lack of continuing care models for youth after they complete the active phase of treatment. For example, too often when youth complete residential placements and return to their families and communities, they are cut-off from treatment services and quickly resume their substance abuse and other destructive behaviors. In response, SAMHSA awarded grants under its program to Improve the Quality and Availability of Residential Treatment and its Continuing Care Component for Adolescents (ART) during 2002. As a result, numerous residential programs have developed and implemented models of providing continuing care to youth.

Along with improving after-care services for adolescents, SAMHSA launched the Effective Adolescent Treatment (EAT) program in 2003 to assist the field in adopting a previously proven effective approach of the CYT initiative. This approach, Motivational Enhancement Therapy/Cognitive Behavioral Therapy, for adolescents with substance use disorders is now being implemented in 22 sites around the country. In 2004, an additional 16 sites will be funded, which will result in a total of 38 programs implementing a practice for which there is evidence of effectiveness and will directly impact success rates for adolescents who are in a battle for their very lives.

In tandem with improving and extending the continuum of care in residential settings, which often include court-adjudicated youth from the criminal justice system, CSAT also provides for critical treatment services through the Juvenile Justice Drug Treatment Court. Six programs are up and running smoothly, and others will be operational soon through our Youth Offender Re-entry Program, which will support 12–14 new programs in Fiscal Year 2004.

CSAT also supports treatment programs for adolescents through its Targeted Capacity Expansion program (TCE), Targeted Capacity Expansion/HIV (TCE/HIV), and HIV Outreach programs. These grantees are encouraged and supported to adopt only effective treatment practices. They are included in meetings and trainings to further facilitate the evolution and improvement of the field of adolescent substance abuse treatment.

Each of these efforts to expand treatment services for adolescents have been well thought out, and each resulting program has been funded based on the underlying and undeniable fact that all we can do to help our Nation's youth is what must be done—nothing less is acceptable. The treatment services afforded through the opportunities I just mentioned are improving services for adolescents, and we are improving and building upon the services for consumers of all ages—children, adolescents, young adults, adults, and older adults alike.

I am particularly proud to tell you that improving services for all of these age groups, from this Nation's elderly down through and including our youngest citizens, is the driving force behind achieving our agency goals—goals which are independent yet interconnected and goals which are clearly outlined in our Matrix of agency priorities.

Key to achieving our goals is developing an ability to report on meaningful outcomes. These outcome measures must be concise, purposeful, and useful. They must get at real outcomes for real people. We are changing the emphasis from, "How did you spend the money?" and, "Did you spend the money according to the rules?" to, "How did you put the dollars to work?" and, "How did your consumers benefit?"

Through an internal data strategy workgroup we are conducting a thorough examination of our data collection and analysis systems. The goal is to take steps now to ensure that decisions related to SAMHSA's priorities are based on the most comprehensive and accurate information available.

As I mentioned previously, an essential component of SAMHSA's data strategy is development of "National Outcomes" and related "National Outcome Measures." Through collaboration with the States we have identified a set of key domains. These domains are:

(1) abstinence from drug use and alcohol abuse, or decreased symptoms from mental illness;

(2) increased or retained employment and school enrollment;

(3) decreased involvement with the criminal justice system;

(4) increased stability in family and living conditions;

(5) increased access to services;

(6) increased retention in services for substance abuse treatment or decreased utilization of psychiatric inpatient beds for mental health treatment; and

(7) increased social connectedness to family, friends, co-workers, and classmates.

As I mentioned, these national outcomes are already being implemented through the President's Access to Recovery program and the Strategic Prevention Framework. Ultimately the National Outcomes will be aligned across all of SAMHSA's programs, including the Community Mental Health Services Block Grant and the Substance Abuse Prevention and Treatment Block Grant. The National Outcomes are an attempt to provide greater flexibility and accountability while limiting the number of reporting requirements on the State. Ultimately we are confident this approach will ensure the data collected is relevant and useful and helps to improve services for the people we serve.

Putting the data to work is a responsibility that SAMHSA is happy to shoulder. We can now clearly and definitively demonstrate that Federal investments in prevention and treatment are beneficial. Prevention works. Treatment works—it helps people triumph over addiction and leads to recovery. The vital treatment and prevention efforts and programs that I have discussed today are working to improve services for adolescents, and for people of all ages.

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity to appear today. I will be pleased to answer any questions you may have.

Senator DEWINE. Thank you very much.

Senator Reed?

Senator REED. Thank you very much, Mr. Curie, for your excellent testimony and for your good work. The SAMHSA program Access to Recovery, the voucher program, for substance abuse treatment would children and adolescents be eligible to participate in this program? If they can, would you please walk the Committee through this process, particularly a more challenging case of an adolescent from a family that is not able to adequately care for him or her; how would this person get access to a voucher? Who would make these judgments?

Mr. CURIE. Absolutely; in fact, we, in terms of Access to Recovery, a major premise of Access to Recovery is States, territories and tribal organizations have the opportunity to shape these voucher programs among meeting their immediate needs. We encourage adolescents as a specialty population. So we anticipate, with the over—I think there are about 66 applications right now we have received for Access to Recovery, and we will be making those awards this summer as they are going through review right now.

Some of the States, territories or tribal organizations would indeed target children and adolescents through their juvenile justice system, child welfare system, and there is a wide range of latitude that we have given States to be able to do that so they can address their most immediate needs. Also, it allows for adolescent treatment, be it residential, outpatient, various forms of counseling and support.

The way it could work and the way in terms of based on our standards is, one, an entity that receives Access to Recovery needs to demonstrate that there will be a professional assessment conducted by a qualified professional, that they have opened more portals of entry to assessment and treatment in their system due to Access to Recovery.

If, for example, they decided to work with their juvenile justice system, if an individual looked as though they were having an issue with drugs or alcohol, they would be sent to the deemed professional for an assessment. Based upon that assessment, then, a voucher would be issued which would basically be for the treatment based upon that recommendation and a list of qualified providers that provide that kind of service that have been approved by the State or by the tribal organization would be available for a decision to be made as to where the individual would seek treatment.

Senator REED. And who would make that decision, Mr. Curie? Would the youngster or someone in the social welfare service?

Mr. CURIE. We would expect in the situation of children and adolescents that, you know, if there is a parent or guardian involved that they would be the primary ones working in making that decision. If they are under custody of the State or county in terms of welfare that again, those decisions would be made by whoever is responsible for that child or adolescent.

But we would encourage, obviously, if there is some sort of preference in the type of treatment that they would have input to that. Obviously, in the adult situation, the adults would have more of a primary choice.

Senator REED. In my view, the system is conceived such that, the individual patient can make the judgment in terms of the type of treatment.

Mr. CURIE. Right.

Senator REED. That is the difference. And here, in many cases, because of the lack of family support and the situation of the child, it is not much different than what you do today except, instead of having one approved vendor or two from the State, you now have a longer list.

Mr. CURIE. I think that is one point. There will be a goal of Access to Recovery, more providers being available. Second, another goal would be using outcomes to promote accountability, and the seven domains I mentioned——

Senator REED. Yes.

Mr. CURIE [CONTINUING].——in my testimony would be driving Access to Recovery. So after a period of time of being in treatment, assessing how well is that adolescent doing in terms of staying drug-free or alcohol-free; how well are they doing in terms of educational or employment pursuits; do they have a more stabilized living situation; do they have access to the services they need? Are they staying out of trouble with the juvenile justice system and measure those real outcomes which depict recovery and which depict building resilience in the young person's life.

And Access to Recovery is really our first program that we have tied these particular seven domains, and our goal, then, is to make sure all these domains are part of what we are measuring through all of our programs, that these seven domains that reflect recovery, whether we are talking block grant, our other Targeted Capacity Expansion Grants, that we are measuring the same things, because if we are funding something that is not promoting resilience or facilitating recovery, then, I question why SAMHSA is funding it.

Senator REED. Right.

Mr. CURIE. Because that is our goal. So Access to Recovery gives us that opportunity.

Senator REED. You quite rightly have put a lot of weight on this notion of the outcome measures, and that raises some obvious questions. Who is collecting the data? Is there a uniform system that is understood by everyone and that is statistically, you know, reliable?

Mr. CURIE. Sure.

Senator REED. We all know that there are some systems that purport to measure but, do not measure very well. Can you talk about that in terms of your proposal?

Mr. CURIE. Yes; yes. In Access to Recovery, we outline the broad domains and requirements that we are looking for, and we would be expecting, again, whatever entity is awarded a grant, whether it be a State, tribal organization or territory, that they would have a uniform way of collecting this data and demonstrate that in their proposal, because we would be looking for a way of uniformly——

Senator REED. Right.

Mr. CURIE [CONTINUING].——assessing outcomes.

Senator REED. But their uniform method might be different than the next grantee; and theirs might be different than the next grantee.

Mr. CURIE. Well, we would expect consistency at least within the State, as a beginning point, because you are right: we want to see what kind of baselines they are establishing. Again, there may be some variance from State to State, but we would not be looking for each grantee only to self-report on their own criteria, but there would be some consistent uniform way of measuring these particular outcomes.

Senator REED. Some of these are necessarily subjective, like the increase in stability in family and living conditions, etc. Are you going to provide any, guidance? There is always the danger that the further you move away from quantitative measures—recidivism, further engagement with law enforcement, you get into subjective areas where it may be fudged.

Mr. CURIE. Right, understood. There have been, among these seven domains, and we have had a range of researchers examine these domains and feel they are very valid for measuring recovery, and there are measures within those domains which are much more quantifiable: length of stay in a housing situation, time that they are living with their family.

Senator REED. Right.

Mr. CURIE. You know, when did they gain employment? How long are they staying in school? So there clearly will need to be more precise measures within those domains.

Senator REED. Mr. Chairman, you have been very kind, but if you would indulge me with one more question.

Why will SAMHSA not develop a framework, a national data framework that could be applied in every State?

Mr. CURIE. Well, that is a very good question. Actually, we have embarked this past year on what we are calling our data strategy, because up until now, there really has been no clear national data strategy, and I know that we have been grappling with moving in the direction of national treatment outcome measures. And in one sense, the data infrastructure that we have funded and developed through the years has been State by State, as that is how the block grants were allocated.

And to make that move from State by State to a national level, while not impossible at all, is going to take an endeavor which we partner clearly with the States, and we are actually looking to do that type of data framework through what we were calling Performance Partnership Grants with the States but working with the

State drug and alcohol authorities and mental health authorities to come to common agreement on the measures as a major first step.

And we are actually much further down that road than we ever have been, and then, it is a matter of operationalizing it. So the answer to your question is yes, we are committed to doing that. But we want to make sure we do it in building on the infrastructure that we have already been funding with the States.

It also, as we have examined it, to start all over with some national treatment outcome measures approach, which is not connected with what we have already done, could be extremely costly, and also, it would be experimental. So we are trying to build on that sure footing. But you are exactly right: the more consistent we can have national measures, the stronger we will all be.

Senator REED. Thank you very much, Mr. Curie.

Thank you, Mr. Chairman.

Senator DEWINE. One of the age-old problems, as we have discussed a little bit this morning, but I would like for you to get into a little more detail, is to take the research into practice. Do you want to describe how SAMHSA works with its Federal partners in the field to move research into practice and ensure that the results of research get used by SAMHSA, but also get used out into the field in the most appropriate ways?

Mr. CURIE. Absolutely; in fact, you are right: age-old is a good word for it, because it has been documented by the IOM study: 17 to 20 years' lag time between research findings being realized on the front line. What we have done with our partners in NIH, both NIAAA, NIDA and NIMH, is SAMHSA has embarked with our partners upon a course of action that we are calling our science to services project and initiative.

And our goal is to facilitate more rapid implementation of effective evidence-based, science-based practices to the front line. And we are doing this in several different ways, in several different avenues. And again, I see this as a process that we have really embarked upon much more formally over the past 2 years. There have been initiatives in the past, but we have tried to bring it together to view the science to service cycle, where the first phase is research and development by the Institutes; the second phase is dissemination and implementation; and the third phase is monitoring and feedback.

And part of this has been in terms of moving ahead is also clarifying the roles of the Federal agencies in doing this. And I think that had not been totally clarified previously. Obviously, the Institutes are responsible for research, and we are a services administration, so we are responsible for services.

So phase one that I described is clearly more of an Institute responsibility which they fulfill; two, dissemination and implementation is a partnership between us, and three, monitoring and feedback rests on us to bring back feedback to feed into the services research agenda in the Institutes.

Some of the activities that we actually have done: NIMH and SAMHSA have jointly funded programs to facilitate the State planning for implementation of evidence-based programs. We are looking to release what we call six tool kits around practices that are working that we make available through both State authorities and to providers.

In partnership with NIDA, NIDA has committed $15 million for 5 years to evaluate SAMHSA's newly-developed Strategic Prevention Framework, which I mentioned earlier, and we also are contributing $15 million to that evaluation process. We also have, as I mentioned earlier, our National Registry of Effective Programs, and again, we are expanding that beyond prevention programs to include treatment programs and are working with the Institutes in arriving at, first of all, what is an effective program? Do they meet certain scientific thresholds of effectiveness, and then, as we list them, how can we begin to implement them?

Also, we have addiction transfer technologies, technology transfer centers in CSAT. We have TA centers, technical assistance centers, in CMHS and what we call our CAPS, our TA centers in the Prevention all have partnerships with the Institutes in bringing those practices to the field, regionally and through States.

So again, we have a framework now for the first time that we are calling science to service. We are putting our endeavors that we have been doing under that framework, and we are actually encouraging new endeavors as well.

Senator DEWINE. Good. We know that we face serious work force issues which limit the expansion of treatment services. What is SAMHSA doing to show leadership to create and also sustain a qualified work force for adolescent treatment as well as adult treatment?

Mr. CURIE. No, absolutely. This has been a problem for quite some time. It has been a challenge to recruit people to our fields. It has been a challenge to keep people in our fields, and it has been a challenge to keep qualified individuals in our fields.

Again, we have several initiatives addressing this. I mentioned the addiction treatment technology centers as well as the CAPS and the TA centers. Each one of them have a major focus on providing training and services to work force to both grantees and providers at the regional level. Each one of them also have partnerships with universities. For the ATTCs, for example, we have a listing on our Website of all of the universities affiliated with them that provide ongoing certification training for professionals.

And so, we are strengthening in that area in terms of providing ongoing certification and training. Also, we have minority fellowship grants to encourage minorities to receive education in our field, in our area, to fund that type of training. And also, we have $6 million for a children's SIG, State Incentive Grant, to fund seven States, which the purpose of that is to develop an infrastructure around—which includes developing workforce and training workforce around services to children and adolescents, that we are just actually issuing at this point in time.

The other thing that we must do is have an ongoing relationship. I know I met with NAADAC, the association of drug and alcohol certified counselors as well as Therapeutic Communities of America. These are organizations, these types of associations are consistently looking at workforce development issue, and we have got to strengthen our partnership with the professional associations to make sure the linkages are being made as well.

Senator DEWINE. Well we thank you very much, and certainly, this subcommittee looks forward to working with you on SAMHSA reauthorization in the future.

Mr. CURIE. Thank you, Mr. Chairman, thank you.

Senator DEWINE. We will be talking a lot in the future.

Mr. CURIE. I am looking forward to it.

Senator DEWINE. Good. Thank you very much.

Let me ask our second panel to come up, and I will begin to introduce you as you come up. On the second panel, we have Sandra Brown from the Department of Psychology at the University of California, San Diego. Dr. Brown is a professor of psychology and psychiatry and also the chief of psychology services at the Veterans Affairs San Diego Health Care Systems. She is associate director of the Child and Adolescent Services Research Center at Children's Hospital of San Diego. Dr. Brown is an internationally-recognized researcher whose work has covered many of the topics of interest at today's hearing.

We also have Dr. Roger Weissberg, from the Department of Psychology at the University of Illinois at Chicago. He is also the executive director of the Collaborative for Academic, Social and Emotional Learning, an international organization committed to supporting the development and dissemination of effective school-based programs that enhance the positive social, emotional, academic, moral, and healthy development of young people. He is a well-respected prevention researcher who has spent much of his career focusing on issues of interest to us in this hearing.

We also have Rhonda Ramsey-Molina, who has served as president and CEO of the Coalition for a Drug-Free Greater Cincinnati since 1999. She brings to this position over 10 years of experience in the field of substance abuse prevention and community coalition building. Prior to this, she directed the Monroe County Community Prevention Coalition in Bloomington, Indiana; served on the Governor's Commission for a Drug Free Indiana and worked as a prevention specialist for the Cincinnati Alcoholism Council.

We also have Ronald Anton, director of juvenile justice and community programs at Day One, Maine's largest provider of substance abuse services to adolescents and families. He has over 30 years of experience as a mental health and substance abuse clinician, clinical supervisor, consultant, trainer and administrator. He currently oversees a broad range of programs, including the Juvenile Treatment Network, which uses vouchers to assist youth in obtaining substance abuse services.

Let me also acknowledge Ann Dolan Peletier, who is the Day One program manager of the Juvenile Treatment Network of Maine. She has traveled with Mr. Anton to be with us today.

Finally, we have Kris Shipley, a young man who has struggled with his own addiction and now works to help others avoid the kind of problems he faced. Let me welcome you to the committee Kris. Kris, thank you very much for being with us.

Let me welcome all of you to the committee, and Dr. Brown, we will start with you, and we have received testimony from all of you. It will be made a part of the record, and we have a 5 minute rule for your testimony, and you can watch the light come on here, and if you could keep your testimony to 5 minutes, and that will give us the opportunity to ask you all some questions.

Dr. Brown?

STATEMENTS OF SANDRA BROWN, PROFESSOR OF PSYCHOLOGY AND PSYCHIATRY, UNIVERSITY OF CALIFORNIA-SAN DIEGO; CHIEF OF PSYCHOLOGY SERVICES, VETERANS AFFAIRS SAN DIEGO HEALTH CARE SYSTEMS; ASSOCIATE DIRECTOR, CHILD AND ADOLESCENT SERVICES RESEARCH CENTER, CHILDREN'S HOSPITAL OF SAN DIEGO; ROGER WEISSBERG, DEPARTMENT OF PSYCHOLOGY, UNIVERSITY OF ILLINOIS AT CHICAGO, EXECUTIVE DIRECTOR, COLLABORATIVE FOR ACADEMIC, SOCIAL AND EMOTIONAL LEARNING; RHONDA RAMSEY-MOLINA, PRESIDENT AND CEO, COALITION FOR A DRUG-FREE GREATER CINCINNATI; RONALD ANTON, DIRECTOR OF JUVENILE JUSTICE AND COMMUNITY PROGRAMS, DAY ONE; AND KRIS SHIPLEY, PASADENA, MD

Ms. BROWN. Thank you. Thank you, Mr. Chairman and Senator Reed.

I am delighted to have the opportunity to speak with you today on this very important topic, and I think that it will become clear through my testimony that current research has exciting new information that can bear on the development of prevention and intervention services for adolescents, and this is a very exciting time from a researcher's perspective in this arena. Research that is supported by the National Institutes of Health and other agencies is leading to a new and very common understanding about the critical role of early onset of addictive disorders in their course, their consequences and their progression.

We are finding that these disorders begin during adolescence and sometimes even during early childhood, and therefore, our interventions may prevent many of the social, behavioral, health and economic consequences that are caused by alcohol and drug abuse as well as provide us an opportunity to treat problems before they become full-blown and to damage the lives of our youth.

I would really like to highlight three points today from a research perspective. One is that in just the past few years, it is becoming increasingly evident that these disorders start routinely much earlier than previously appreciated. Second, that hazardous drinking, particularly binge drinking, is on the rise, and third, that we have a new understanding of the substantial problems that alcohol and drugs produce in adolescent brain functioning, and I would like to highlight those in my testimony this morning.

NIAAA and NIDA-supported researchers are finding that alcohol and drug addictions commonly start earlier than previously understood, and the earlier youth start, the greater the lifetime risk for dependence. New findings regarding the patterns of abuse and dependence dramatically underscore the importance of reducing underage drinking and drug use. The age of most prevalent tobacco dependence onset, for example, is 15. For alcohol dependence, age 18 is the most common period of first diagnosis of dependence.

It is now clear that most cases of alcohol dependence begin before age 25. The epidemiological research message, I think, is obvious: that youth is a critical window of opportunity for preventing alcohol, tobacco and other disorders. Alcohol, which is the most commonly abused substance, has found an increasing rise in hazardous drinking over the past few years. Binge drinking, which we have mentioned are episodes of heavy drinking of five drinks or more for males or four drinks or more for females is a problem for people of any age, whether or not the drinker is addicted to alcohol.

But an alarming number of children and adolescents binge drink, and it is becoming increasingly evident. As Senator DeWine highlighted earlier, 11 percent of 6th graders and a third of high school seniors and half of all college students binge drink just within the past 2 weeks. Drinking too much too fast in this manner carries substantial risks for youth, additional risks for youth beyond those carried with this behavior among adults. They include car crashes, injury, death, property damage, encounters with the justice system, family, school and workplace problems.

Each drink increases the fatal crash risk for youth moreso than adults. At a blood alcohol level of 0.08 percent at every age and gender group, there is at least an elevenfold increase in single vehicle fatal crash risk. But among males ages 16 to 20 at that same level of 0.08 percent, there is a 52-fold increase in single vehicle crash risk compared to sober drivers in that same age range.

In a series of recent studies, we have begun to understand how the exposure to alcohol and other drugs of abuse during adolescence produce substantially more adverse effects than exposure during adulthood, in part because of very important changes that are occurring in the brain during adolescence. Advances in science have now brought us to the point where we can use new animal models, modern brain imaging technology that was previously not available and other neurobehavioral assessment tools to probe the effects of alcohol, tobacco and other drugs on the developing brain and determine immediate as well as long-term behavioral consequences.

Emerging findings from our neuroimaging studies demonstrate that brain structures change substantially during adolescence, and in particular, brains become more specialized and efficient. Our developmentally-focused research indicates that there are distinct neurocognitive disadvantages among adolescents with alcohol and drug use disorders compared to teens without substance involvement.

So, for example, alcohol-dependent adolescents who have 3 weeks of abstinence still show a 10 percent decrement in their memory skills relative to teens who do not have a history of alcohol abuse. Neuropsychological testing following these youth throughout adolescence and into young adulthood show decreased attentional abilities, additional memory problems, visual-spatial skills, all of which add to the evidence of substantial brain damage to adolescents as a function of alcohol and drug involvement.

Our new directions in adolescent research can help inform us on important aspects of cognition and decision making, emotional regulation and risk perception by adolescents that can help us determine how these factors play a role in the use and consequences of alcohol and drugs, and armed with this knowledge about how teens make decisions and control their impulses and desires and what motivates their behaviors, we will be poised to improve on the current prevention programs and intervention programs that are in place.

I thank you.

[The prepared statement of Ms. Brown follows:]

PREPARED STATEMENT OF SANDRA A. BROWN

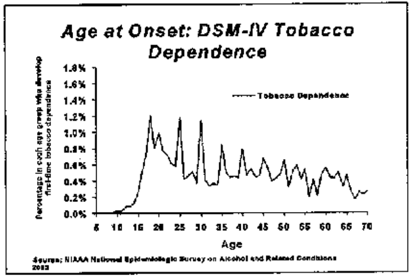
INTRODUCTION

Recent research supported by the National Institutes of Health and other agencies is leading to a common understanding about the critical role of age of onset of addictive disorders in their course, consequences and progression. Researchers are finding that these disorders often begin during adolescence and sometimes even during childhood; therefore early intervention may prevent many of the social, behavioral, health, and economic consequences caused by alcohol and drug abuse as well as provide an opportunity to treat problems before they become full blown and damage in the lives of our youth.

EARLY ONSET

NIAAA and NIDA-supported researchers are finding that alcohol and other drug addictions commonly start earlier than previously understood, and the earlier youth start the greater the lifetime risk for dependence. New findings regarding early patterns of abuse and dependence dramatically underscore the importance of reducing underage drinking and drug use. As shown in Figures 1 and 2, the age of most prevalent tobacco dependence onset is 15 and for alcohol dependence age 18 is the most common period of first diagnosis of dependence. It is now clear that most cases of alcohol dependence begin before age 25. After that age, new cases drop off precipitously. The epidemiological research message is obvious: youth is a critical window of opportunity for preventing alcohol, tobacco and other drug disorders. Previous studies have suggested that this is so, but the new research findings, corroborated by independent sources, have confirmed these findings.

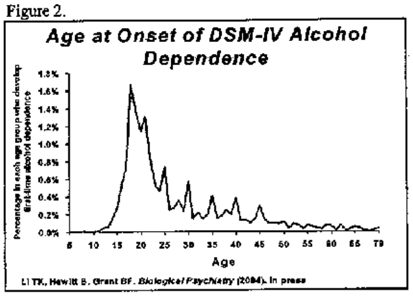
Figure 1.



Age at Onset: DSM-IV Tobacco Dependence

Source: NIAAA National Epidemiologic Survey on Alcohol and Related Conditions 2003

Figure 2.



Age at Onset of DSM-IV Alcohol Dependence

Li TK, Hewitt B, Grant BF. *Biological Psychiatry* (2004). In press

Ongoing research may reveal a cause-and-effect relationship between early use and subsequent dependence, or it may reveal that common biological and environmental factors drive the risk for both use and dependence, as well as other addictive and psychiatric disorders. In either case, these new data are a powerful indicator of the need for more effective preventive interventions for youth.

Given the new epidemiologic findings, the fact that alcohol use is so widespread among children and adolescents is troubling. Alcohol is the primary substance of abuse among American children and adolescents.

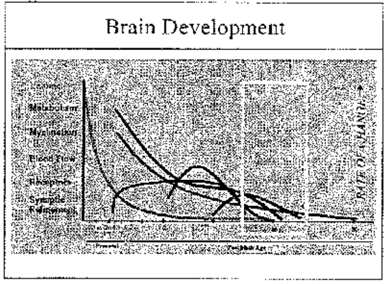
- 47 percent of 8th graders, 67 percent of 10th graders, and 78 percent of 12th graders have used alcohol.
- 11 percent of 6th graders have reported binge drinking (five or more drinks per occasion for males; four for females) in the past 2 weeks.
- 30 percent of high-school seniors have reported binge drinking at least once a month.
- 44 percent of college students have reported binge drinking in the past 2 weeks.
- 23 percent have reported that they binge drink frequently.
- Youth who drink alcohol before age 14 are four times more likely to become alcohol dependent in their lifetime than those who wait until age 21 or older.

NEURODEVELOPMENTAL STUDIES

A series of recent studies indicate that exposure to drugs of abuse during adolescence may produce more adverse effects than exposure during adulthood in part because of the important changes occurring in the brain during adolescent development.

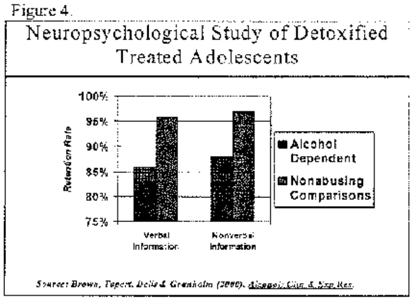
Advances in science have now brought us to a point where researchers can use new animal models, modern brain imaging technology and other neurobehavioral assessment tools to probe the effects of alcohol, tobacco and other drugs on the developing brain and determine immediate as well as its long-term behavioral consequences.

Figure 3.



Brain Development

Figure 4.



Neuropsychological Study of Detoxified Treated Adolescents

Source: Brown, Tapert, Delis & Granholm (2000). Alcohol: Clin. & Exp. Res.

For example, as shown in Figure 3, emerging findings from neuroimaging studies demonstrate that brain structures change during adolescence to become more specialized and efficient in their functioning. Our developmentally focused research indicates important neurocognitive disadvantages among adolescents with alcohol and drug use disorders as compared to teens without substance involvement. For example, even after 3 weeks of abstinence, alcohol dependent youth display a 10 percent decrement in delayed memory functions (Figure 4). Neuropsychological testing of these youth followed up to 8 years demonstrates that continued heavy drinking during adolescence is associated with diminished memory of verbal and nonverbal material, and poorer performance on tests requiring attention skills. Alcohol and drug withdrawal over the teen years appears to uniquely contribute to deterioration in functioning in visuospatial tasks. Recent brain imaging studies of alcohol and drug using youth compared to youth without such experience have also shown reduced hippocarmpal volumes, white matter microstructure irregularities, and brain response abnormalities while performing cognitive tasks among those with early alcohol/drug exposure. Additionally, youth who have extensive experience with alcohol have increased brain response when viewing alcohol advertisements compared to other beverage advertisements.

Animal studies are consistent with the findings that alcohol or drug exposure during adolescence has more adverse consequences than delayed (adult) exposure. In these investigations, adolescent alcohol exposure is associated with more frontal lobe damage and poorer spatial memory. Further research is needed to understand how age of drinking or drug use onset and duration of abstinence at the time of assessment affect cognitive and behavioral findings. Longitudinal studies are needed to clarify neuromaturational changes associated with early alcohol and drug exposure and patterns of resiliency. Although the magnitude of effects observed in adolescents' neurocognition is modest, the implications are major given the prevalence of alcohol involvement, and the important educational, occupational, and social transitions that occur during adolescence.

These new directions in adolescent research will help to inform us on important aspects of cognition, decision-making, motivation, emotional regulation, and risk perception during adolescence, and will help us determine how these factors play a role in the use and consequences of alcohol and drugs. Armed with new knowledge about how adolescents make decisions, control their impulses and desires, and what motivates their behavior, researchers and agencies will be poised to design better preventions and interventions to reduce alcohol, tobacco and other drug experimentation, abuse and dependence, as well as other risky behaviors. Adolescents have in common unique neurobiological and neurocognitive developmental factors that affect risk and resiliency vis-á-vis substance use. Few studies have addressed these developmentally specific neurobiological and neurocognitive mechanisms and consequences of heavy drinking/use in this group despite the importance of these for long-term development.

VULNERABILITY

While early initiation of substance involvement is a powerful predictor of subsequent dependence, not everyone who uses at a young age later develops abuse or dependence. Even among youth with two alcoholic parents, only about one-half become alcohol dependent. The outcome is determined largely by the interplay of environmental and genetic/biological factors.

Environmental factors have the biggest influence on whether a child first uses alcohol, tobacco or other substances. However, genetic factors have an influence on whether a child continues to use. Understanding how these factors result in initiation and continuation of use or make resolution of drinking/drug use more difficult is essential to disrupting the developmental process of addictive behavior. Thus, a focus on genetic/biological aspect of use may clarify how variations in genes result in differences in how our bodies absorb, distribute, and eliminate substances and variability in tolerance.

BINGE DRINKING

Binge drinking, episodes of heavy drinking (five or more drinks for males; four or more drinks for females), is a problem for people in any age group, whether or not the drinker is addicted to alcohol. An alarming number of children and adolescents binge drink and that it is increasing. Drinking too much, too fast in this manner carries additional risks especially for youth. They include car crashes, injury, death, property damage, encounters with the justice system, and family, school, and workplace problems. Each drink increases the fatal crash risk more for youth than adults. At a blood alcohol level of 0.08 percent in every age and gender group there is at least a 11-fold increase in single vehicle fatal crash risk. Among males 16–20 at a blood alcohol level of 0.08 percent there is a 52-fold increase in single vehicle crash risk compared to sober drivers the same age.

Epidemiology studies have shown beyond doubt that genes play a role in risk of alcohol, tobacco and other drug dependence. Research toward discovering which genes are involved, what biochemical pathways they influence in brain cells, and how these pathways translate into specific behaviors is the next step to this line of investigation. Such findings provide information about genetic/molecular events in the brain that influence use, and provide potential targets for pharmacological intervention. For example, new findings about a naturally occurring marijuana-like substance in the brain also provide potential new molecular targets for pharmacological intervention.

PREVENTION OF ABUSE AND DEPENDENCE

Prevention of alcohol and substance use problems among youth need to be understood as a continuum of services and consequently research needs to span this continuum. This continuum ranges from universal prevention (those appropriate for all children and adolescents who might use alcohol, tobacco or other drugs) to selective preventative measures for subgroups with risk factors for abuse or dependence, to indicated preventative measures for those individually at high risk for the disorder. Preventive interventions for alcohol, tobacco, and other drug use disorders and related problems can be improved through early detection and diagnosis, and through testing of new behavioral strategies at the individual, family, and community levels. Of particular interest are longitudinal data on children entering the age of risk, adolescents and young adults in high-risk environments (college and the military), youth who resolve use/problems without formal treatment, and women of childbearing age. New interventions to prevent early-onset of use can be gleaned through studies that identify developmental and environmental features as well as biological factors that stimulate or suppress addictive behavior.

It is important to evaluate prevention programs on an ongoing basis as well as disseminate research findings to communities, educators, parents, and health care providers who are the first line of defense against alcohol, drugs and other risky behaviors. Both NIAAA and NIDA offer free educational materials designed to help students learn about the impact of alcohol and drugs on the brain and body. Parents, educators, and community leaders can use these materials to help guide their thinking, planning, selection, and delivery of drug abuse prevention programs at the community level. NIAAA and NIDA also have websites that offer science-based information specifically designed for teens. The *Leadership to Keep Children Alcohol-Free* has recruited 33 Governors' spouses to spearhead a national prevention campaign which influences both public policy and local practices. The *Task Force on College Drinking* has brought together university presidents and researchers, and is making headway in efforts to reduce the seemingly intractable problem of drinking by college students.

Clearly, alcohol and substance use disorders are the result of a complex combination of genetic and environmental interactions that influence how people respond to the substance and their initial propensity for using alcohol and drugs. Longitudinal studies of these genetic and environmental factors are crucial for understanding (1) early initiation of drinking and drug use, (2) transition to harmful use, abuse, and dependence, and (3) remission and abatement of alcohol and drug related problems in untreated populations. This is particularly critical for youth as some resolve problematic use without treatment and research in this area can teach us how to facilitate changes in alcohol and drug involvement in ways that are most developmentally appropriate and acceptable to youth. Developmentally specific research in these areas has potential to help identify mechanisms of vulnerability and protection which can be used in prevention.

IMPROVING EFFECTIVENESS OF TREATMENT

Findings from the National Household Survey on Drug Abuse indicate that about 10 percent of 12- to 17-year-olds (about 2.3 million) are heavy users of alcohol or drugs, yet only 187,000 (8 percent) received services. Although estimates of the cost-effectiveness of early intervention are speculative, research suggests that early treatment has the potential to be cost-effective, especially in comparison with incarceration or treatment for a long-term abuse problem. For instance, cost benefit research on drug and alcohol treatment generally (Office of National Drug Control Policy, 2001) suggest that the range of savings is between $2.50 and $9.60 for every dollar spent on treatment. Unfortunately, only one person in seven who would qualify for treatment was admitted to treatment in 1999 (National Institute on Drug Abuse Community Epidemiology Work Group, 1999). The proportion of youth who are admitted to treatment is even smaller.

Much progress has been made in developing behavioral/psychosocial interventions for alcohol and other substance use disorders, but much remains to be investigated. Controlled research trials provide evidence that several psychosocial treatment approaches may be effective in reducing alcohol and other drug use while also improving associated behavioral, familial, and psychosocial outcomes. These outcomes are enhanced when a combination of modalities are offered in a comprehensive, integrated treatment plan that addresses alcohol and drug abuse and a broad range of biopsychosocial problems, skills deficits, and comorbid psychiatric problems. For example, having families involved in the treatment program increases the likelihood of success in youth. Brief Strategic Family Therapy (BSFT) and Cognitive Behavioral Interventions are examples of promising youth specific treatment already in the field. The evaluation and dissemination of more evidence-based interventions in a variety of community venues, including schools, healthcare settings, and prisons, should be a high priority. Developing, evaluating, and improving efficacy and cost-effectiveness of treatments is a central goal in alcohol, tobacco and drug research. Adolescent focused treatment research lags behind adult treatment research. Studies are needed to develop and test new behavioral therapies; conduct clinical trials in existing treatment settings, examine cost-effectiveness of behavioral and pharmaceutical therapies; clarify mechanisms of action that make effective treatments successful; and conduct trials of dissemination strategies, to test how effective they are at introducing behavioral and pharmacological treatments into real-world clinical practice.

Alcohol, tobacco and other drugs affect genders and subpopulations differently, and some groups suffer more adverse effects of alcohol, tobacco and drugs than other groups. For treatment of these youth problems to be optimally effective, research to study the role of gender, ethnicity, socioeconomic status, and other variables in determining the effects of various substance abuse interventions is sorely needed. For example, we need to support studies on specific facilitators and barriers to alcohol and drug treatment in minority and rural populations.

Clearly multifaceted longitudinal research is sorely needed to fully understand the development and resolution of alcohol and drug use disorders in the context of child and adolescent development. Through such focused process research (e.g., changes in brain structure and recovery of functioning, decision making process, social and family dynamics) can improved prevention and intervention policies emerge.

ATTACHED REFERENCES

Brown, S.A. & Tapert, S.F. (In Press). Adolescence and the trajectory of alcohol use: Basic to clinical studies. In Dahl, R.E. and Spear, L.P. (Eds.), Adolescent Brain

Development: Vulnerabilities and Opportunities, Volume 1021 of the Annals of the New York Academy of Sciences.

Brown, S.A., Tapert, S.F., Granholm, E., & Delis, D.C. (2000). Neurocognitive functioning of adolescents: Effects of protracted alcohol use. Alcoholism: Clinical and Experimental Research, **24** (2): 164-171.

Tapert, S.F., Cheung, E.H., Brown, G.G., Frank, L.R., Paulus, M.P., Schweinsburg, A.D., Meloy, M.J., & Brown, S.A. (2003). Neural response to alcohol stimuli in alcohol use disordered adolescents. Archives of General Psychology, **60:** 727-735.

ADOLESCENCE AND THE TRAJECTORY OF ALCOHOL USE: BASIC TO CLINICAL STUDIES

SANDRA A. BROWN AND SUSAN F. TAPERT

ABSTRACT

Emerging findings from developmentally focused research indicates subtle but important neurocognitive disadvantages among adolescents with alcohol use disorders (AUD) as compared to teens without AUD. Even after 3 weeks of abstinence AUD youth display a 10 percent decrement in delayed memory functions. Neuropsychological testing of youth followed at 4 and 8 years demonstrates that heavy drinking during adolescence is associated with diminished retrieval of verbal and nonverbal material, and poorer performance on tests requiring attention skills. Alcohol withdrawal over the teen years appears to uniquely contribute to deterioration in functioning in visuospatial tasks. Brain imaging studies suggest reduced hippocampal volumes, white matter microstructure irregularities, brain response abnormalities while performing challenging cognitive tasks, and enhanced brain response when viewing alcohol cues (i.e., alcohol advertisements) among adolescents with AUD. Family characteristics such as history of alcoholism and socioeconomic status as well as personal features, including adolescent psychopathology, gender, and age of onset, must be carefully considered when investigating the influence of teenage drinking on neurocognition. Further research is needed to understand how age of drinking onset and duration of abstinence at the time of assessment affect cognitive findings. Longitudinal studies are needed to clarify neuromaturational changes associated with early alcohol exposure and patterns of resiliency. Although the magnitude of alcohol-related effects observed in adolescents' neurocognition is relatively modest, the implications are major given the prevalence of alcohol involvement, and the important educational, occupational, and social transitions that occur during adolescence. KEYWORDS: adolescence; alcohol; neurocogntition; fMRI; development.

The present chapter highlights the relation of alcohol involvement among youth and neurocognitive functioning over the course of adolescent development. Following a brief review of adolescent alcohol use patterns and related problems, the chapter focuses on neurocognitive and neuroimaging studies from our research program. Emerging evidence demonstrates the cognitive and behavioral impact of early alcohol involvement and potential deleterious effects on brain functioning.

BACKGROUND

Adolescence is the most common time for initiation of alcohol use. By the time high school students graduate, over 80 percent will have begun drinking alcohol. Heavy drinking (five or more drinks per occasion) is also prevalent, with 18 percent of 10th graders and 30 percent of 12th graders reporting that they got drunk in the past month.[1] Approximately 6 percent of high school students consume quantities of alcohol and drink in problematic patterns such that they meet diagnostic criteria for alcohol abuse or dependence.[2] Alcohol is a contributor to the top causes of death for youth: accidents, suicides, and homicides.[3] For example, the leading cause of death for youth age 16 to 20 is unintentional injury, primarily related to motor vehicle accidents, of which one in three involve alcohol.[4]

The earlier alcohol use is initiated, the greater the risk for a variety of adverse consequences. Youth that begin drinking alcohol before age 14, have a 41 percent chance of developing alcohol dependence during their lifetime compared to individuals who wait to the legal drinking age of 21 when lifetime risk is reduced to 10 percent.[5] Early use of alcohol elevates risk for a multitude of mental health and social problems.[6] Rates of conduct disorder, antisocial personality disorder, nicotine dependence, and illicit drug abuse and dependence are significantly higher among youth that drink early.[7] Cross-culturally, studies also indicate that heavy adolescent alcohol use is associated with psychological distress, anxiety, and depression.[7] Youth with early problems such as school difficulties, personal difficulties (e.g., hyperactivity, impulsivity, and inattentiveness), or family problems are more likely of begin drinking early. Although alcohol use is prevalent among adolescents, those most disadvantaged, such as the homeless, abused, or neglected, evidence high rates of alcohol use disorders (AUD), as well as behavioral and psychological symptoms.[6]

Youths with certain mental health disorders evident in early adolescence are more likely to initiate alcohol use and accelerate their use throughout adolescence. Disruptive disorders, including conduct problems and aggressive or oppositional behaviors, have been most consistently associated with the early onset of alcohol use and abuse.[7,8] In girls, early anxiety disorders may also accelerate alcohol involvement,[7] and girls appear more vulnerable to the adverse consequences under conditions of low parental monitoring.

HOW ALCOHOL AFFECTS ADOLESCENT BRAIN DEVELOPMENT

Despite the prevalence of alcohol use and related disorders in adolescence, we are just beginning to understand how protracted alcohol consumption during this period affects brain development and cognition. Central nervous system abnormalities including neurocognitive deficits, atrophy of several brain structures, abnormal electrophysiology, altered blood flow, abnormal brain function, and disruptive sleep have clearly been observed in adults with chronic heavy drinking histories (e.g., Refs. 9-11). Although it is less clear how adolescent brains are affected, mounting evidence from animal and human studies suggest a potentially greater impact of alcohol prior to full brain maturation. Understanding the neuromaturational implications of adolescent alcohol use is critical, since maladaptive patterns of alcohol use during adolescent development appears to limit educational, occupational, and social opportunities.

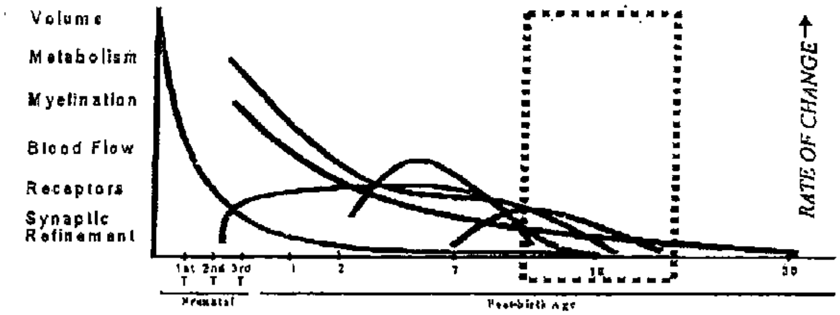


FIGURE 1. Human brain development patterns across development. (Adapted from Tapert and Schweinsburg.[30] In press. Reproduced by permission.)

ADOLESCENT BRAIN DEVELOPMENT

To understand alcohol effects on adolescent brain development, it is helpful to briefly review the maturational processes unfolding during these years. As summarized in FIGURE 1, substantial neuromaturation continues throughout adolescence. Structural magnetic resonance imaging (MR1) studies have described disproportionate growth in the hippocampal region, and decreases in gray matter volume and density during adolescence, particularly in frontal and parietal brain regions, which underlies maturation of cognitive processing.[12,13,14] Neuronal myelination continues throughout adolescence and young adulthood[15,16] and is thought to be related to increases in cognitive efficiency. Stages of increased cerebral blood flow support periods of rapid brain growth.[17] Synaptic pruning occurs through midadolescence, varies in relation to environmental stimulation, and results in greater efficiency, as evidenced by decreased energy requirements and diminished glucose metabolism.[18,19] Changes in functional regional activity become increasingly evident and are indicative of regional specialization and maturation.[20]

ANIMAL STUDIES

While human research on alcohol's impact on the brain has mushroomed over the past decade with the advent of more sensitive neuroimaging technology, animal studies have previously demonstrated that alcohol affects adolescent brain development processes in several ways.[21] In general, animal studies consistently show that adolescents appear to be more sensitive than adults to the learning and memory impairments produced by alcohol exposure, but less sensitive to the sedation and temperature regulation effects of this drug. For example, in a recent study investigators gave adolescent and adult rats multiple exposures of large quantities of alcohol, mimicking the binge drinking pattern characteristic of one-third of U.S. teens. Once rats reached adulthood, those who had been given alcohol during adolescence showed more impairments on a spatial learning memory task than those who had been given alcohol only as adults.[22] Furthermore, studies of adolescent and adult rats reveal that chronic alcohol use during adolescence alters sensitivity to alcohol-induced motor dyscoordination.[21] Another study examined the behavioral and neuroanatomical effects of a 4-day alcohol binge on adolescent and adult rats. While significant brain damage was found in both groups during the autopsy, several frontal brain regions were damaged only in the adolescent exposed rats, suggesting that different brain regions vary in vulnerability to alcohol effects across development.[23]

NEUROPSYCHOLOGICAL STUDIES

Through a series of studies we have longitudinally examined youths with and without alcohol abuse and dependence and monitored their alcohol and drug involvement into adulthood to investigate neurocognitive functioning over time. Neuropsychological studies of adults with AUD have consistently revealed visuospatial, executive functioning, psychomotor, and memory impairments secondary to heavy alcohol exposure.[6 24] However, until recently it was unclear whether the neurocognition of teenagers might be affected by protracted alcohol consumption. The limited number of studies that have examined neurocognition in adolescents with AUD have generally demonstrated modest functional decrements. For example, an early neuropsychological study by other investigators recruited teens with AUD from treatment centers, and demonstrated subtle deficits in verbal skills among youths with AUD compared to nonabusing controls, as well as problem-solving errors among girls with AUD relative to control girls.[25] Tarter and colleagues[26] examined cognition among 106 female youths with AUD, most of whom met criteria for other substance use disorders as well. Compared to 74 control girls, those with AUD performed poorly in several domains, including language, attention, perceptual efficiency, general intelligence, and academic achievement.

In a series of studies, our group has assessed AUD youths recruited from alcohol- and drug-treatment facilities and nonabusing control teens from the same communities who were matched for gender, age, socioeconomic status, and family history of alcohol and substance use disorders. In one study of 15–16 year olds with at least 100 episodes of heavy alcohol use (M=753), youths with an AUD and 3 weeks of abstinence used fewer learning strategies to acquire new information and showed a 10 percent deficit in the ability to retrieve verbal and nonverbal information compared to control teens.[24] While both abusing and nonabusing youths were able to learn verbal and nonverbal (visual-spatial) information, as shown in TABLE 1, delayed recall was reduced approximately 10 percent across tasks (e.g., Wechsler Memory Scale-Visual Reproduction, California Verbal Learning Test) for those with a history of AUD.

We followed samples of abusing and nonabusing youths longitudinally, and readministered a neurocognitive testing battery at 4 and 8 years subsequent to initial testing.[27 28] Among those who continued substance involvement after treatment, alcohol withdrawal symptoms experienced at any point during the follow-up period predicted poorer with visuospatial functioning at 4 years after treatment discharge, and those with recent use and a past history of withdrawal evidenced the poorest neurocognitive outcomes.[27] Further, at 8 years post initial assessment (average age=24 years) greater cumulative lifetime alcohol experiences predicted poorer attention functioning as well as poorer working memory scores at the 8-year follow-up.[28] A history of alcohol withdrawal symptoms predicted reductions in visual-spatial functioning as measured by the Wechsler Memory Scale-Visual Reproduction as well as Rey-Osterrieth figure, These predictions remained significant even after excluding youths who had drank heavily (≥4 drinks/occasion for females, ≥5 drinks for males) and used other substances in the 28 days prior to testing. Together, these studies indicate that heavy alcohol involvement during adolescence is associated with cognitive deficits that worsen as drinking continues into late adolescence and young adulthood. Specifically, adolescents who by age 15–16 years of age have over 100 heavy drinking episodes and meet criteria for an AUD, use fewer strategies to learn new information and demonstrate significantly reduced memory skills. For those who continue alcohol involvement during the next 4 years and experience any withdrawal symptoms, deterioration in attention and visual-spatial functioning continues. By young adulthood these skills continue to deteriorate relative to the youth's own baseline and those not abusing. These findings suggest that use and withdrawal differentially affect neurocognitive functioning across this stage of development.

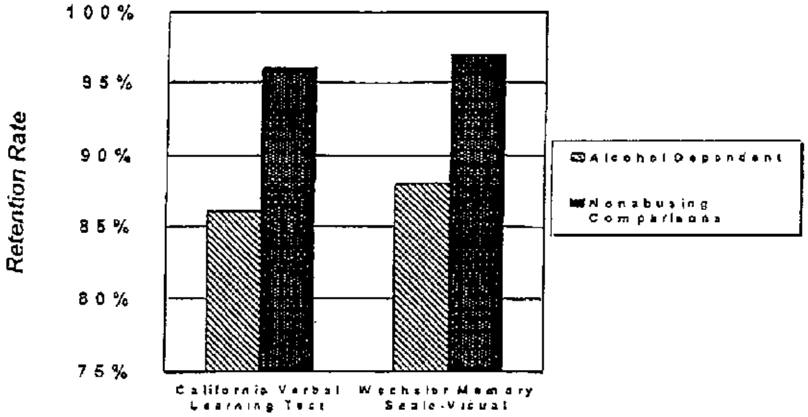


FIGURE 2. Neurocognition of detoxified alcohol-dependent teens. (From Brown *et al.*[24] Reproduced by permission.)

As part of our longitudinal program of research we have examined the complex relationship between neurocognitive skills and onset and persistence of AUDs. Neurocognitive functioning appears to moderate outcome through its relation with coping skills and alcohol reinforcement expectancies. Adolescent coping skills significantly predict less alcohol and other drug use after treatment for those with lower levels of cognitive functioning, while coping skills do not predict outcomes for youths with higher levels of cognitive functioning.[23] In contrast, for youths with above average language skills, having more favorable alcohol expectancies predicted more alcohol and drug use and dependence symptoms after treatment, while expectancies played a smaller role for young people with lower levels of language ability.[24] These longitudinal investigations highlight changing neurocognitive functioning in relation to clinical course as well as the adverse cumulative effect of prolonged alcohol use during the course of adolescent development. Finally, neurocognition plays an active role in promoting or retarding alcohol involvement, depending on personal and environmental characteristics.

BRAIN-IMAGING STUDIES

The recent advent of noninvasive neuroimaging techniques has provided unique opportunities to examine the influence of alcohol involvement on brain structure and function in adolescents. De Bellis and colleagues used MRI to quantify volumes of several brain structures among youths ages 13 to 21 years.[29] Those with adolescent-onset AUD had reduced hippocampal volumes, but similar cortical gray and white matter, amygdala, and corpus callosum sizes compared to controls. We have used diffusion tensor imaging to investigate corpus callosum microstructure integrity among teenagers with AUD and nonabusing controls.[30] All participants were free from psychiatric disorders, and had limited experience with other drugs. Preliminary results indicated that AUD youths exhibit subtle white matter abnormalities, particularly in the splenium of the corpus callosum. Thus, although adolescents with AUD show normal corpus callosum volumes, subtle abnormalities in white matter micro-structure may represent the beginnings of a more profound disruption than is observed in chronic heavy drinking adults.

Functional brain changes have also been demonstrated among youths with AUD. Young women, ages 18–25, who started drinking heavily during adolescence and had a lifetime history of an AUD showed significantly diminished frontal and parietal functional MRI (fMRI) response as well as less accurate performance during a spatial working memory task relative to demographically similar young women with comparable family histories of alcoholism.[31] We used the same paradigm to examine brain activation among adolescents, ages 14–17, with little alcohol experience and age and gender-matched teens with AUD but without histories of other psychiatric disorders or heavy drug use. In contrast to our findings with young adult women, AUD boys and girls showed increased parietal response during spatial working memory compared to control teens, despite similar task performance.[30] These findings, if replicated, suggest that in the early stages of AUD, youth may be capable of compensating for subtle alcohol-induced neuronal disturbances by recruiting additional resources and more intense and widespread neuronal activation. However, the neurocognitive and fMRI findings among young adult women suggest that, as heavy drinking continues, neural injury may increase,[32] the brain may be less able to counteract alcohol-related disruption, and behaviors may begin to show signs of impairment.

Functional neuroimaging has also been used to evaluate response to alcohol cues among adults with AUD and adolescents.[33] In our study of 14–17 year olds, teens were shown pictures of alcoholic beverage advertisements and visually similar non-alcoholic beverage ads during fMRI. The images presented were individualized based on personal drinking experiences and preference in order to ensure familiarity with cues. Compared to youth with limited alcohol experience, teens with AUD demonstrated increased brain response to alcohol pictures in left anterior, limbic, and visual regions commonly associated with emotion, visual processing, and reward circuitry. Although family history of AUD was a significant predictor of responsivity, personal alcohol use was a stronger predictor of brain response to visual alcohol cues.

Moreover, AUD teens reporting greater monthly alcohol consumption and more intense desires to drink showed the greatest extent of' neural response to the alcohol advertisements. Given the strong neural response to alcohol beverage advertisements among teens with AUD, it is possible that these media images may influence continued drinking among teens with alcohol problems, and may interfere with effective coping strategies in youths attempting to stop using.

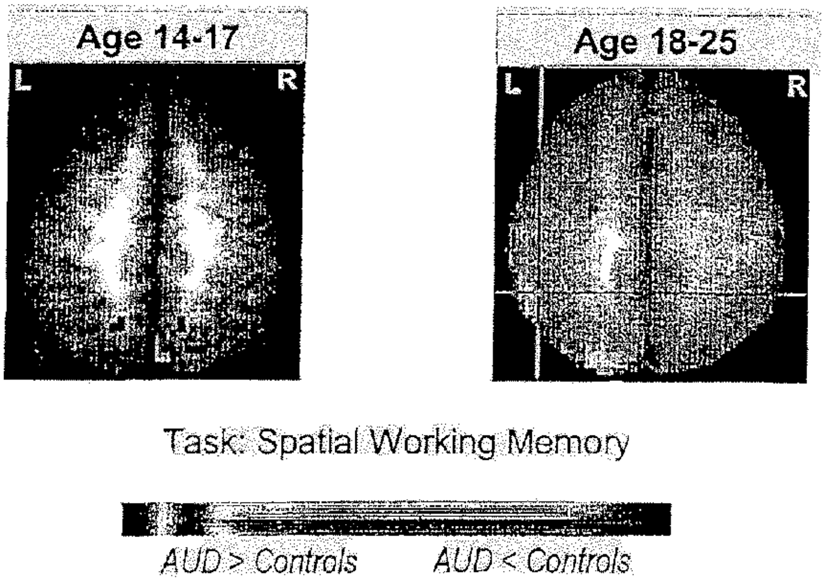


FIGURE 3. Brain response of alcohol use in disordered adolescents and young adults: Spatial working memory. (From Tapert *et al.* Reproduced by permission.)

DEVELOPMENTAL CONSIDERATIONS

Several factors are critical in the consideration of alcohol's influence on the neurocognitive and neuroanatomical functioning of youth. First, while adverse behavioral and social trajectories are evident with the onset AUDs during adolescence, it remains unclear whether the adolescent brain is ultimately more vulnerable to this toxin or will be more resilient and capable of recovery than adults (e.g., Refs. 6 and 24). Evidence with animals suggests greater vulnerability to adverse learning consequences and our human studies suggest cumulative neurocognitive impairment over the course of middle to late adolescence. However, neuroimaging findings are consistent with early compensation, and only prospective longitudinal studies can resolve this apparent discrepancy.

Gender differences have been evident in studies of AUDed adults, with females more susceptible to alcohol-related brain injury than males.[34] Hormonal fluctuations, differences in alcohol metabolism, and gender-specific drinking patterns, may partially account for the mounting evidence that adolescent girls suffer greater alcohol-related neurocognitive deficits than adolescent boys. Girls with AUDs show more perseveration errors than nonabusing girls, while boys with AUDs show *fewer* perseverative errors than control boys, suggesting that this component of frontal lobe functioning may be more adversely affected by heavy alcohol use in girls.[25] In our longitudinal research of 70 adolescents followed over 8 years, young women demonstrated more adverse cognitive effects related to alcohol and other drug use, especially in working memory and visuospatial functioning, whereas young men showed a greater relationship between verbal learning and substance involvement. Further, while alcohol withdrawal and hangovers were associated with poorer performance in both males and females, this effect was stronger in females.[28] Additionally, our recent fMRI spatial working memory investigations have shown greater magnitude of response change in girls than boys. Gender differences in fMRI response may reflect gender-specific disruptions in brain development related in part to hormonal changes or dysregulation in puberty,[35] which may ultimately influence subsequent neural development and functioning.

Studies of alcohol-related neurocognitive and neural sequelae, need to consider other sources of abnormalities that may predate the onset of heavy drinking among youth. Two such factors are familial alcoholism and personal comorbid psychopathology, both of which are risk factors for developing an AUD and have been associated with unique neurocognitive features. Youths with multigenerational and dense family histories of alcoholism have shown modest neuropsychological differences compared to youths without such family histories independent of personal substance intake and maternal drinking during pregnancy.[36] Adolescent males who do not personally abuse alcohol or other drugs, but have family histories of alcohol dependence commonly perform worse on tests of language functioning and academic achievement, organization of new information, executive cognitive functioning, perseveration, working memory, nonverbal memory, visuospatial skills, and attention (e.g., Ref. 37). In our studies, family history of alcohol dependence and adolescent alcohol/substance use operate as separate risk factors for poorer neuropsychological performance in youth.[36]

Disruptive disorders (e.g., conduct disorder, attention deficit hyperactivity disorder) and certain internalizing disorders are also associated with specific neurocognitive disadvantages that elevate risk for adolescent AUDs. Conduct disorder and related behavior disorders, characterized by disinhibition (e.g., ADHD) have been associated with poorer performance on academic achievement and IQ tests, and are more likely to show deficits on measures of executive functioning, including sequencing, cognitive flexibility, selective attention, and initiating planned strategies, including nonverbal tests.[38] Internalizing disorders, some of which parallel adolescent AUD results, have also been associated with alterations in cognitive performance and brain functioning in adolescents, Youths with familial alcoholism often show a low amplitude P3 component of the event-related potential, which has a slow rate of change during adolescence. However, in girls, this neurophysiological developmental pattern is also associated with childhood internalizing and externalizing psychopathology as well as psychiatric diagnoses in young adulthood.[39]

YOUTH RECOVERY OF NEUROCOGNITIVE ABILITIES

It remains uncertain to what extent the observed abnormalities in cognition of heavy drinking youth repair with sustained abstinence, and, if such abnormalities are repaired, how much sobriety is required until performance and brain integrity measures resume predrinking levels. Adults with histories of chronic heavy drinking have been shown to improve even after extended (i.e., multiple years) abstinence on neuropsychological testing, magnetic resonance spectroscopy, and brain volume indices (e.g., Refs. 43 and 44). In our studies, measurable memory deficits (10 percent) are evident after 3 weeks of abstinence, and neurocognitive functioning after 4 years of abstention appears comparable to baseline (e.g., Refs. 24 and 27). It remains to be seen if recoverability of brain integrity and cognitive function might be more complete in youth, whose brains are more plastic, or if recovery is less likely because neurotoxic insult may have adversely affected the course of neuromaturation.

REFERENCES

1. JOHNSTON, L.D., P.M. O'MALLEY & J.G. BACHMAN. 2003. The Monitoring of the Future National Survey Results on Adolescent Drug Use: Overview of Key Findings. 2002. National Institute on Drug Abuse. Bethesda, MD.

2. ROHDE, P., P.M. LEWINSOHN & J.R. SEELEY. 1996. Psychiatric comorbidity with problematic alcohol use in high school students. J. Am. Acad. Child Adolesc. Psychiatry 35: 101-109.

3. NATIONAL CENTER FOR HEALTH STATISTICS. 1999. 10 leading causes of death, United States. Office of Statistics and Programming, National Center for Injury Prevention and Control, Center for Disease Control, Atlanta, GA.

4. HINGSON, R, T. HEEREN & M. WINTER. 2003. Age of first intoxication, heavy drinking, driving after drinking and risk of unintentional injury among U.S. college students. J. Stud. Alcohol 64: 23-31.

5. GRANT, B.F. & D.A. DAWSON. 1997. Age at onset of alcohol use and its association with DSM-IV alcohol abuse and dependence: results from the National Longitudinal Alcohol Epidemiologic Survey. J. Subst. Abuse 9: 103-110.

6. BROWN, S.A., G.A. AARONS & A.M. ABRANTES. 2001. Adolescent alcohol and drug abuse. In Handbook Of Clinical Child Psychology, 3rd, C.E. Walker & M.C. Roberts, Eds.: 757-775, Wiley. New York.

7. ROSE, R.J. 1998. A developmental behavioral-genetic perspective on alcoholism risk. Alcohol Health Res. World, 22: 131-143.

8. COSTELLO, E.I., A. ERKANLI, E, FEDERMAN & A. ANGOLD. 1999, Development of psychiatric comorbidity with substance abuse in adolescents: effects of timing and sex. J. Clin. Child Psychol. 28: 298-311.

9. GRANT, I. 1987. Alcohol and the brain: neuropsychological correlates. J. Consult. Clin. Psychol. 55: 310-324.

10. NIXON, S.J., R. PAUL & M. PHILLIPS. 1998. Cognitive efficiency in alcoholics and polysubstance abusers. Alcohol. Clin. Exp. Res. 22: 1414-1420.

11. SULLIVAN, E.V, et al. 2003. Disruption of frontocerebellar circuitry and function in alcoholism. Alcohol. Clin. Exp. Res. 27: 301-309.

12. GIEDD, J.N. et al. 1999. Brain development during childhood and adolescence: a longitudinal MRI study. Nature Neurosci. 2: 861-863.

13. JERNIGAN, T.L. et al. 1991. Maturation of human cerebrum observed in vivo during adolescence. Brain 114(Pt. 5): 2037-2049.

14. GIEDD, J.N. et al. 1996. Quantitative magnetic. resonance imaging of human brain development: ages 4-18. Cereb. Cortex, 6: 551-560.

15. SOWELL, E.R. et al. 2001. Improved memory functioning and frontal lobe maturation between childhood and adolescence: a structural MRI study, J. Int. Neuropsychol. Soc. 7: 312-322.

16. COURCHESNE, E. et al. 2000. Normal brain development and aging: quantitative analysis at in vivo MR imaging in healthy volunteers. Radiology 216: 672-682.

17. EPSTEIN, H.T. 1999. Stages of increased cerebra blood flow accompany stages of rapid brain growth. Brain Dev. 21: 535-539.

18. HUTTENLOCHER, P.R. & A.S. DABHOLKAR. 1997. Regional differences in synaptogenesis in human cerebral cortex. J. Comp. Neural. 387: 167-178.

19. CHUCANI, H.T. 1998. A critical period of brain development: studies of cerebral-glucose utilization with PET. Prev, Med. 27: I84-188.

20. CASEY. B.J., J.N. GIEDD & K.M. THOMAS. 2000. Structural and functional brain development and its relation to cognitive development. Biol. Psychol. 54: 241-257.

21. SPEAR, L.P. 2002. The adolescent brain and the college drinker: biological basis of propensity to use and misuse alcohol, J. Stud. Alcohol, Suppl. 14: 71-81.

22. WHITE, A.M. et al. 2000. Binge pattern ethanol exposure in adolescent and adult rats: differential impact on subsequent responsiveness to ethanol. Alcohol. Clin. Exp. Res. 24: 125-1256.

23. CREWS, F.T. et al. 2000. Binge ethanol consumption causes differential brain damage in young adolescent rats compared with adult rats. Alcohol. Clin. Exp. Res. 24: 1712-1723.

24. BROWN, S.A. et al. 2000. Neurocognitive functioning of adolescents: effects of protracted alcohol use. Alcohol. Clin. and Exp. Res. 24: 164-171.

25. MOSS, H.B. et al. 1994. A neuropsychologic profile of adolescent alcoholics. Alcohol Clin, Exp. Res. 18; 159-163.

26. TARTER, R.E. et al. 1995. Cognitive capacity in female adolescent substance abusers. Drug Alcohol Depend, 39: 15–21.

27. TAPERT, S.F. & S.A. BROWN. 1999. Neuropsychological correlates of adolescent substance abuse: 4-year outcomes. J. Int. Neuropsychol. Soc. 5: 481-493.

28. TAPERT, S.F. et al. 2002. Substance use and withdrawal: neuropsychological functioning over 8 years in youth. J. Int. Neuropsychol, Soc. 8: 873-883.

29. DEBELLIS, M.D. et al. 2000. Hippocampal volume in adolescent-onset alcohol use disorders. Am, J. Psychiatry 157: 737-744.

30. TAPERT, S.F. & A. D. SCHWEINSBURG. The human adolescent brain and alcohol use disorders. In Recent Developments in Alcoholism, Vol. XVII: Research on Alcohol Problems in Adolescents and Young Adults. M. Galanter Ed. In press.

31. TAPERT, S.F. & S.A. BROWN. 1999. Gender differences in neuropsychological functioning of young adult substance abusers. Proc. Annu. Meet. of the American Psychological Association. Boston.

32. FEIN, G. et al, 1994. IH magnetic resonance spectroscopic imaging separates neuronal from glial changes in alcohol-related brain atrophy. In Alcohol and Glial Cells, F.E. Lancaster, Ed: 227-241. National Institutes of Health. Bethesda, MD.

33. TAPERT, S.F. et al. 2003. Neural response to alcohol stimuli in adolescents with alcohol use disorder. Arch. Gen. Psychiatry 60: 727-735.

34. HOMMER, D. et al. 2001. Evidence for a gender-related effect of alcoholism on brain volumes. Am. J. Psychiatry 158: 198-204.

35. DEBELLIS, M.D. et al. 2001. Sex differences in brain maturation during childhood and adolescence. Cereb. Cortex 11: 552-557.

36. TAPERT, S.F. & S.A. BROWN 2000. Substance dependence, family history of alcohol dependence, and neuropsychological functioning in adolescence. Addiction 95: 1043-1053.

37. CORRAL, M.M., S.R. HOLGUIN & F. CADAVEIRA. 1999. Neuropsychological characteristics in children of alcoholics: familial density. J. Stud. Alcohol 60: 509-513.

38. MOFFITT, T.E. 1993. The neuropsychology of conduct disorder Dev. Psychopathol. 5: 135-151.

39. HILL, S.Y. & S. SHEN. 2002. Neurodevelopmental patterns of visual P3b in association with familial risk for alcohol dependence and childhood diagnosis. Biol. Psychiatry 51: 621-631.

40. TAPERT, S. et al. 2002. Attention dysfunction predicts substance involvement in community youth. J. Am. Acad. Child. Adolesc. Psychiatry 41: 680-686.

41. TAPERT, S.F. et al. 1999. The role of neurocognitive abilities in coping with adolescent relapse to alcohol and drug use. J. Stud. Alcohol 60: 500-508.

42. TAPERT, S.F. et al. 2003. Influence of language abilities and alcohol expectancies on the persistence of heavy drinking in youth. J. Stud. Alcohol 64: 313-321.

43. SCHWEINSBURG, B.C. et al. 2000. Elevated myo inositol in gray matter of recently detoxified but not long term abstinent alcoholics: a preliminary MR spectroscopy study. Alcohol. Clin. Exp. Res. 24: 699-705.

44. BRANDT, J. et al. 1983. Cognitive loss and recovery in long-term alcohol abusers. Arch. Gen. Psychiatry 40: 435-442.

NEUROCOGNITIVE FUNCTIONING OF ADOLESCENTS: EFFECTS OF PROTRACTED ALCOHOL USE

SANDRA A. BROWN, SUSAN F. TAPERT, ERIC GRANHOLM, AND DEAN C. DELIS

Background: The present study examined associations between alcohol involvement in early to middle adolescence and neuropsychological (NP) functioning.

Methods: Alcohol-dependent adolescence (n=33) with over 100 lifetime alcohol episodes and without dependence on other substances were recruited from alcohol/drug abuse treatment facilities. Comparison (n=24) adolescents had no histories of alcohol or drug problems and were matched to alcohol-dependent participants on age (15 to 16 years), gender, socioeconomic status, education, and family history of alcohol dependence. NP tests and psychosocial measures were administered to alcohol-dependent participants following 3 weeks of detoxification.

Results: Alcohol-dependent and comparison adolescents demonstrated significant differences on several NP scores. Protracted alcohol use was associated with poorer performance on verbal and nonverbal retention in the context of intact learning and recognition discriminability. Recent alcohol withdrawal among adolescents was associated with poor visuospatial functioning, whereas lifetime alcohol withdrawal was associated with poorer retrieval of verbal and nonverbal information.

Conclusions: Deficits in retrieval of verbal and nonverbal information and in visuospatial functioning were evident in youths with histories of heavy drinking during early and middle adolescence.

Key Words: Adolescence, Alcohol Dependence, Withdrawal, Neuropsychology, Memory.

DOMAINS OF NEUROPSYCHOLOGICAL (NP) functioning most commonly studied in conjunction with alcohol dependence do not isomorphically map with neuroanatomical effects, but reflect prevalent behavioral indices of neurocognitive integrity. Language functioning has emerged as a risk factor in children of alcoholics (Najam et al., 1997), although it is not generally affected by personal heavy drinking. Visuospatial, executive, psychomotor, and memory functioning yield the most robust performance decrements associated with substance use disorders in adults (Grant, 1987).

Impaired NP performance may be associated with changes in superior frontal and parietal cortices, mesial temporal lobe structures, and subcortical regions (e.g., diencephalon and caudate nucleus). Although some NP studies have suggested that the right hemisphere is selectively vulnerable to ethanol effects, most studies report no lateralization (Kwon et al., 1997; Nicolas et al., 1993). Executive functioning seems to have the slowest neurocognitive recovery from central nervous system (CNS) exposure to ethanol due to increased likelihood of neural death in the frontal lobe relative to other brain regions (Fein et al., 1994). However, only 30–60 percent of adults with alcohol dependence evidence significant deficits on NP tests (Grant et al., 1984). In addition, drinking variables rarely account for significant variance in NP functioning when demographic factors are appropriately controlled. This has lead some researchers to explore specific mechanisms linking alcohol use to NP decrements.

Sullivan and colleagues (1996) found that adult patients with histories of alcohol-withdrawal related seizures evidenced greater white matter volume loss in temporal regions, relative to both normal controls and alcohol-dependent adults without seizure histories. Repeated withdrawal experiences may increase the risk of alcohol-related seizures, which may in turn compound cerebral abnormalities. Animal models of alcohol dependence (e.g., Eckardt et al., 1992) have reported that cerebral glucose utilization is increased in gray and white matter regions among alcohol-dependent rats during withdrawal, suggesting that certain brain regions have abnormal physiologic responding during withdrawal.

This abnormal physiology could lead to longer term or permanent cellular alterations, influencing subsequent neurocognitive performance. Alcohol withdrawal has also been shown to induce depressed mood symptoms in adults (Brown and Schuckit, 1988).

Recent studies have begun to evaluate neurocognitive functioning patterns in alcohol-dependent adolescents (Giancola et al., 1998; Moss et al., 1994; Tapert and Brown, 1999; Tarter et al., 1995). Problems that have been detected pose a threat to healthy development, as significant neuromaturation continues during adolescence. For example, synaptic connections disappear as a function of redundancy and environmental stimulation up until about age 16 (Huttenlocher, 1990). Continued myelination in frontal and parietal association areas (Kolb and Pantic, 1989) suggests that speed of information transfer in these regions is less efficient before age 15. Cerebral metabolic rates increase greatly during childhood and taper toward adult levels by approximately age 20 (Harris, 1995).

CNS exposure to neurotoxins such as ethanol during adolescent development has undetermined consequences. Thus, adolescence is a period of potential differential impact of ethanol exposure compared with adulthood, when such neuroanatomical changes have stabilized. At present, the. NP impact of alcohol dependence during early and middle adolescence, and the pattern of NP impairment in contrast with alcohol-dependent adults, is relatively unknown. Several processes may influence the adolescent risk of neurocognitive damage. First, adolescent brains may have more resilience: maturation is not fully complete, allowing more opportunity for compensatory development. Second, neurological development and/or cognitive maturation may be disrupted, altered, or impeded by exposure to neurotoxins during this time in development. Neurotoxins may also accelerate other risks, such as head trauma and academic drop-out.

This study examined associations between protracted alcohol involvement during early to middle adolescence and the neurocognitive functioning in middle adolescence. Youths with repeated alcohol exposure were predicted to evidence difficulties in aspects of verbal and nonverbal memory and visuospatial functioning, based on results from the adult literature. In addition, repeated alcohol withdrawal experiences were predicted to be associated with deficient performance on measures of these neurocognitive domains.

METHODS

Participants

Participants were recruited from treatment programs and surrounding communities as part of an ongoing longitudinal study (e.g., Brown et al., 1994). The alcohol-dependent participants were recruited from adolescent inpatient alcohol and drug abuse treatment programs in metropolitan San Diego, and met DSM-111-R criteria (American Psychiatric Association, 1987) for a lifetime diagnosis of alcohol dependence. Alcohol-dependent participants with more than 100 lifetime alcohol use episodes and one or more heavy drinking episodes in the past 3 months were selected to test hypotheses for the present study. The alcohol-dependent participants drank alcohol heavily during early and middle adolescence, when maturational changes (e.g. myelination of frontal and parietal association areas; Kolb and Pantie, 1989) would normally take place.

TABLE 1. DEMOGRAPHIC CHARACTERISTICS OF ALCOHOL-DEPENDENT AND COMPARISON ADOLESCENTS

	Alcohol-dependent mean (SD) (n – 33)	Comparison mean (SD) (n=24)
Male (%)	58	58
Age (range, 15–16 yr)	16.2 (0.56)	15.9 (0.59)
Caucasian (%)	71	74
Grades completed	9.5 (0.66)	9.2 (0.82)
Hollingshead socioeconomic status	31.2 (11.6)	32.5 (14.3)
Family history of alcohol dependence (%)	57	71
Frequency mothers drank during pregnancy (%):		
No drinking	52	50
Less than once per month	30	32
1-3 times per month	6	14
More than 4 times per month	12	5
Average drinks mother consumed per occasion	0.88 (1.17)	0.86 (1.04)
Maximum drinks mother consumed	1.00 (1.46)	1.45 (2.36)

Note: all conparisons nonsignificant (ex – 0.05).
Range 11–77; higher score reflects lower socioeconomic background.

Age-appropriate comparisons across NP tests were facilitated by scores from a comparison group of community adolescents without histories of alcohol or other drug use disorders. These comparison adolescents were recruited through advertisements in the same communities from which the clinical sample was drawn and via parents who were in adult alcohol treatment programs. Comparison adolescents had no history of alcohol or other drug problems and were recruited to match the age, gender, socioeconomic status, education, and family history of substance-dependence characteristics of the alcohol dependent teens.

Clinical and comparison adolescents were excluded if they: (1) did not have a resource person (parent) who independently consented to participate for corroboration of biographical and substance involvement information; (2) lived over 50 miles from the research facility; (3) had an Axis 1 psychiatric disorder (predating the onset of regular substance use); (4) had a history of significant head trauma with loss of consciousness > 2 min or neurological condition that could compromise NP performance (e.g., seizure disorder); (5) did not speak English; or (6) had a history of drug dependence or heavy recent drug use. Analyses were performed on 33 alcohol-dependent and 24 comparison adolescents. The nonabusing sample was comparable to the alcohol-dependent sample on gender, age (15–16 years), ethnicity, years of education, Hollingshead socioeconomic index (mostly lower middle class), family history of alcohol and other drug dependence, and maternal drinking during pregnancy (see Table 1). Informed consent, approved by the University of California, San Diego institutional review board and clinical agencies, was independently obtained from all youths and parents.

Measures

Structured Clinical Interview. This 90-min interview (Brown et al., 1987) assessed demographic information, social and academic functioning, physical and emotional health, behavioral intentions and attitudes regarding substance use, and maternal alcohol use during pregnancy. Mood was assessed with the Profile of Mood States (POMS; McNair et al., 1981). Family history of alcohol and other drug dependence was assessed with DSM-111-R criteria and Schuckit's problem list (Schuckit et al.,

1988) for all biological first- and second-degree relatives. For purposes of the present study, a minimum of one alcohol-dependent biological parent was required for classification as positive for family history.

Customary Drinking and Drug Use Record (CDDR). The lifetime version of the CDDR (Brown et al., 1998) was administered to obtain information on lifetime and recent (past 3 months) involvement with alcohol (beer, wine, liquor) and eight types of drugs (i.e., marijuana, amphetamines, barbiturates, hallucinogens, cocaine, inhalents, opiates, and prescription medications or other substances not previously specified), life problems related to alcohol and drug use, DSM-III-R and DSM-IV substance abuse and dependence criteria, and alcohol and other drug-withdrawal symptoms. The CDDR incorporates the Cahalan drinking classification procedure (Cahalan, 1970), Drug Indulgence Index (Lee, 1974), and Alcohol Dependence Scale (Skinner and Horn, 1984). Good internal consistency, test-retest reliability, Interrater reliability, and convergent and discriminant validity have been demonstrated with adolescents (Brown et al., 1996; Stewart & Brown, 1995).

TABLE 2. DESCRIPTION OF NEUROPSYCHOLOGICAL TEST BATTERY

Measure	Ability tested
WISC-R Subtests	
Vocabulary	Language development; general intelligence.
Information	Store at general knowledge.
Similarties	Abstract reasoning.
Arithmatic	Mental tracking and computation.
Digit Span	Auditory attention.
Block Design	Visual-motor organization; visual-spatial reasoning.
Coding	Psychomotor processing and speed.
California Verbal Learning Test-Children's Version (CVLT-C)	
List A trial 1	Words recalled on first learning trial.
List A total	Words recalled on five learning trials.
Long-delay free recall (LDF)	Target words recalled after 20-minute delay.
Samantic clustering	Ratio of observed to expected semantic grouping on recall trials.
Retention (LDF/List A Trial 5)	Proportion of words recalled on fifth learning trial also recalled on LDF.
Recognition discriminability	Proportion correct on recognition testing of target words embedded among distractor words.
WMS Visual Reproduction	
Immediate recall (IR)	Visual stimuli reproduced after initial presentation.
Delayed recall (DR)	Visual stimuli reproduced after 10-minute delay.
Retention (DR/IR)	Proportion of visual stimuli reproduced on IR also recalled on DR.
Trail Making Test	
Part A time	Psychomotor processing speed.
Part B time	Cognitive flexibility and speeded processing.
B-A time	Part B time minus Part a time (subtracting out simple motor speed).
Embedded Figures Test	Visual memory: visuoperception: contour analysis.
Boston Naming Test	Word finding: confrontation naming.
Letter Fluency	Letter-specific verbal fluency.
Category Test	Nonverbal concept formation and deductive reasoning.

Neuropsychological Test Battery. This 2-hr battery was designed to measure verbal and nonverbal learning and memory, visuospatial functioning, language skills, attention, and problem solving skills, based on literature indicating impairment among adults with alcohol and drug dependence (see Table 2), The battery consisted of the following tests: Wechsler Intelligence Scale for Children-Revised (WISC-R; Wechsler, 1974) subtests of Vocabulary, Information, Similarities, Arithmetic, Digit Span, Block Design, and Coding; Wechsler Memory Scale Visual Reproduction subtest (WMS-VR; Wechsler, 1945); Trail Making Test (Reitan and Wolfson, 1985); Embedded figures Test (Witkin et al., 1971); an adapted 30-item Boston Naming Test (Kaplan et al., 1983); Controlled Oral Word Association Test (Benton et al., 1983); Booklet Category Test (DeFillippis and McCampbell, 1979); and California Verbal Learning Test-Children's version (CVLT-C; Delis et al., 1994).

Administration of the CVLT-C involved oral presentation of a list of 15 words (List A) over five trials. After each trial, participants were asked to recall as many words from the list as possible. The clustering of words into semantic categories was trucked. An interference word list (List B) was presented and asked to be recalled. Next, participants were asked to recall List A in a free recall format, then in a cued recall format in which semantic category names were provided. After a 20-min delay, participants recalled List A in free and cued formats again, then were asked to discriminate List A words from distractor words on a yes-no recognition trial.

Procedure

Youths were administered the battery of NP tests, structured clinical interview, and CDDR by Bachelors- and Masters-level psychometrists trained to criterion. Alcohol-dependent adolescents were interviewed and tested during the 3rd week of their inpatient treatment programs, and thus were detoxified from alcohol and other drugs at the time of testing. Comparison adolescents were administered assessments at the research facility. A resource person (typically a parent) was separately interviewed for corroboration of historical, family history, and substance use information. Separate psychometrists interviewed adolescents and parents to enhance self-disclosure and to ensure confidentiality. In cases of discrepant information, additional data were obtained from other family members (see Brown et al., 1996).

RESULTS

Lifetime and current alcohol and drug use characteristics differed greatly between alcohol-dependent and comparison teens (see Table 3). Alcohol-dependent adolescents reported an average of 753 alcohol use episodes spanning approximately 5 years, as well as larger quantities of alcohol per drinking episode and more alcohol withdrawal symptoms in their lifetimes than nonabusing comparison participants. Although alcohol-dependent youths with lifetime or current dependence on other drugs were excluded, the alcohol-dependent group reported exposure to other drugs, primarily cannabis and stimulants.

WISC-R Vocabulary ($p<0.01$), information ($p<0.01$), Similarities ($p<0.05$), and Coding ($p<0.01$) subtest scores were significantly worse in the alcohol-dependent sample (see Table 4). The group difference in Coding scores remained statistically significant ($p<0.05$) after covariation for Vocabulary as a proxy for IQ (Kaufman, 1975).

TABLE 3. ALCOHOL AND OTHER DRUG INVOLVEMENT CHARACTERISTICS OF ALCOHOL DEPENDENT AND COMPARISON ADOLESCENTS

	Alcohol-dependent mean (SD) (n=33)	Comparison mean (SD) (n=24)
Lifetime		
Age of first alcohol use*	10.93 (3.46)	12.89 (2.49)
Age of first weekly alcohol use*	13.45 (2.05)	13.83 (1.17)
Total times drank***	753.21 (658.38)	82.38 (185.63)
Alcohol dependency symptoms***	6.67 (3.66)	0.29 (0.55)
Alcohol withdrawal symptoms***	2.06 (2.19)	0.36 (0.72)
Have used any alcohol (%)	100	80
Have used any drugs (%)***	100	8
Have used marijuana (%)***	94	4
Have used amphetamines (%)***	78	0
Have used cocaine (%)*	33	4
Have used hallucinogens (%)***	18	4
Have used Inhalants (%)**	6	4
Past 3 months		
Drinking days per month***	18.76 (17.15)	1.79 (2.15)
Drinks per day***	5.13 (6.33)	0.19 (0.16)
Maximum drinks on an occasion***	16.33 (9.62)	2.63 (3.44)
Drinks per month***	154.00 (189.93)	3.38 (4.61)
Alcohol withdrawal symptoms*	1.48 (1.79)	0.25 (0.68)

* Includes only recent (past 3 month) drinkers.
* $p<0.05$;** $p<0.01$;*** $p<0.001$.

TABLE 4. WISC-R SCORES FOR ALCOHOL-DEPENDENT AND COMPARISON ADOLESCENTS

Test	Alcohol-dependent mean (SD) (n=33)	Comparison mean (SD) (n=24)
Verbal		

TABLE 4. WISC-R SCORES FOR ALCOHOL-DEPENDENT AND COMPARISON ADOLESCENTS—CONTINUED

Test	Alcohol-dependent mean (SD) (n=33)	Comparison mean (SD) (n=24)
Vocabulary**	9.30 (2.01)	10.88 (2.31)
Information**	8.79 (2.00)	10.75 (3.31)
SImilarities*	10.15 (2.85	11.92 (2.76)
Arithmetic	10.45 (3.32)	10.38 (2.30)
Digit Span	9.27 (2.80)	10.25 (2.88)
Performance		
Block Design	10.91 (2.94)	11.33 (2.32)
Coding**	8.94 (3.26)	11.54 (3.62)

* $p<0.05$;** $p<0.01$.

New learning of verbal material was not associated with exposure to ethanol, as evidenced by comparable group performances on CVLT-C learning trials (see Table 5). However, alcohol-dependent youths employed fewer semantic learning strategies than comparison youths ($p<0.05$), and retention rates were significantly worse among the alcohol-dependent adolescents ($p<0.05$). However, when asked to discriminate between words previously presented and distractor words, both groups fared equally well, and alcohol-dependent youths were often able to correctly recognize words they had failed to recall.

TABLE 5. NEUROPSYCHOLOGICAL TEST SCORES FOR ALCOHOL-DEPENDENT AND COMPARISON ADOLESCENTS

Measure	Alcohol-dependent mean (SD) (n=33)	Comparison mean (SD) (n=24)
CVLT-C		
List A trial 1	7.15 (1.79)	6.68 (1.70)
List A total	54.12 (8.21)	55.12 (8.15)
Long-delay free recall	11.30 (2.80)	12.60 (2.27)
Semantic clustering*	1.84 (0.60)	2.18 (0.63)
% Retention*	85.84 (17.90)	96.16 (16.15)
% Recognition discriminability	95.36 (3.47)	95.58 (4.48)
Visual Reproduction:		
Immediate recall	10.03 (2.39)	11.13 (1.73)
Delayed recall**	8.82 (2.70)	10.75 (1.85)
% Retention**	87.85 (16.40)	97.79 (9.42)
Embedded Figures Test time	442.00 (256.98)	415.38 (207.18)
Trail Making Test, Part B time	61.70 (25.78)	56.68 (18.75)
Trail Making Test B-A time	33.45 (19.77)	29.46 (13.14)
Boston Naming Test (correct without cue, Max=30)	24.36 (2.97)	25.92 (3.94)
Latter Fluency	35.39 (9.09)	34.83 (9.14)
Category Test errors	19.82 (10.71)	16.79 (10.44)

* $p<0.05$;** $p<0.01$.

Visual reproduction retention rates were significantly lower in the alcohol-dependent sample ($p<0.01$). Although alcohol-dependent and nonabusing youths were similar on immediate delay reproductions, alcohol-dependent adolescents reproduced less nonverbal information after the 10-min delay period, and their delayed recall performances were proportionately worse than what they had recalled immediately after exposure to the stimuli.

Verbal and nonverbal retention rates were not significantly related to gender, family history of alcohol/drug dependence, or maternal drinking during pregnancy.

To examine the hypothesis that alcohol withdrawal is associated with neurocognitive functioning during early to middle adolescence, correlations between alcohol withdrawal symptoms and NP scores were evaluated (see Table 6). A modest but statistically significant pattern of correlations was evident in that 20 of 22 lifetime withdrawal-NP correlations and 19 of 22 recent withdrawal-NP correlations were in the predicted direction ($p<0.01$; Ghahramani, 1996, p. 241). In particular, more lifetime alcohol-withdrawal experiences were associated with poorer performance on delay trials of the CVLT-C ($r=-0.28, p<0.05$) and WMS-VR ($r=-0.32, p<0.05$), WMS-VR retention rates ($r=-0.33, p<0.05$), and scores on WISC-R Information ($r=-0.27, p< 0.05$). Recent withdrawal symptom counts were associated with poorer WISC-R Block Design scaled scores ($r=-0.26, p<0.05$) and Embedded Figures Test completion times ($r=0.26, p<0.07$). Moderate correlations were found with between both lifetime and current withdrawal symptom counts and a task involving multiple brain systems (Trail Making Test, p's<0.07).

NP performances were associated with other drinking variables, although to a lesser extent than lifetime alcohol withdrawal, and with POMS depression scale scores (see Table 7). Frequency of drinking was correlated with WISC-R Information and Block Design scores, and DSM-IV alcohol dependence criteria were correlated with WMS-VR delay and retention rates (p's<0.05). Depressed mood was related to CVLT-C and WMS-VR delay trials, WMS-VR retention (p's 0.05 to 0.01), and also with lifetime ($p<0.01$) and current ($p<0.05$) alcohol withdrawal. Because alcohol withdrawal commonly involves depressed mood, and depressed mood may affect neurocognition, two mediational models were tested: (1) to see if depressed mood mediates the relationship between withdrawal and poor retention, and (2) to see if withdrawal mediates the relationship between depressed mood and poor retention. Hierarchical regressions suggested the former: that depressed mood mediates the relationship between withdrawal and poor WMS-VR retention rates in a mixed gender sample $F(2,51)=5.58$, $p<0.01$; $R^2\Delta=15\%$, $p<0.05$).

Table 6. Correlations Between Withdrawal Symptoms and Neuropsychological Test Scores for Alcohol-Dependent and Comparison Adolescents (N=57)

Measure	Alcohol Withdrawal	
	Lifetime	Recent
WISC-R		
Vocabulary	−0.12	0.18
Information	−0.27*	−0.24
Similarities	−0.04	−0.23
Arithmetic	−0.14	−0.21
Digit Span	0.21	0.13
Block Design	−0.18	−0.26*
Coding	−0.20	−0.17
CVLT-C		
List A trial 1	0.05	0.05
List A total	−0.10	0.07
Long-delay free recall	−0.28*	−0.17
Semantic clustering	−0.19	−0.18
Retention rate	−0.22	−0.04
Recognition discriminability	0.06	0.01
WMS Visual Reproduction		
Immediate recall	−0.14	−0.15
Delayed recall	−0.32*	−0.17
Retention rate	−0.33*	−0.07
Embedded Figures Test time[a]	0.08	0.26**
Trail Making Test, Part B time	0.25**	0.13
Trails B-A time	0.22	0.25**
Boston Naming Test	−0.10	−0.07
Letter Fluency	0.06	0.13
Category Test errors*	0.07	0.04
Correlations In predicted direction (p<0.01)	20/22	19/22

[a] Positive correlations predicted; all other correlations predicted to be negative.
* p< 0.05; ** p<0.07.

To see if the pattern of scores might be affected by the inclusion of both boys and girls, analyses were tested on boys only (n=19 alcohol-dependent and n=15 comparison). The same pattern of results emerged for group differences on NP tests and for NP correlations with withdrawal symptoms as were found with the full sample. Of note, boys' lifetime alcohol-withdrawal symptoms correlated highly with CVLT-C retention ($r=-0.49, p< 0.005$) and WMS-VR retention ($r=-0.55, p<0.001$) rates. In contrast to the mixed gender analyses, boys' lifetime alcohol-withdrawal symptoms predicted retention rates independent from the influence of depressed mood in hierarchical regressions (coefficient p's<0.05). Withdrawal mediated the relationship between depressed mood and CVLT-C retention ($B=-0.37, p<0.05$), whereas de-pressed mood did not mediate the relationship between alcohol withdrawal and retention rates.

DISCUSSION

This study identified subtle to modest NP deficiencies associated with repeated heavy alcohol use and withdrawal during early to middle adolescence. In particular, alcohol-dependent adolescents with a minimum of 3-weeks of abstinence differed from sociodemographically and family history-matched nonabusers on several NP measures. As hypothesized, aspects of memory functioning and visuospatial cognition were poor, compared with the demographically and family history-matched controls. Verbal skill deficiencies were also found in the alcohol-dependent group.

The pattern of memory functioning results was internally consistent and suggested deficits among heavy drinking adolescents. New learning did not appear to be affected by alcohol involvement when measured after 3-weeks of abstinence, but alcohol-dependent youths, especially those with histories of alcohol withdrawal symptoms, failed to reproduce some words or figure components that they had recalled on trials administered immediately after exposure to the stimuli (see Fig. 1). This retrieval deficiency was mediated by depression scores for the full sample, but for boys, withdrawal had an independent contribution to poorer retention and withdrawal that mediated the mood-retrieval relationship. As participants were screened for primary mood disorders, the relationship between depression and withdrawal suggests that alcohol-dependent adolescents may have experienced alcohol-induced mood changes that affected neurocognition. This mood change seems to have affected boys and girls differently.

In examining the process of learning, alcohol-dependent youths were found to underutilize semantic clustering strategies, which may have hampered efficient recall performance. When asked to discriminate between words previously presented and distractor words, both alcohol-dependent and nonabusing groups performed equally well. This resembled a pattern of NP performance observed in patients with mild frontal-subcortical dysfunction (review Butters et al., 1995). However, the reduced level of recall on delay in alcohol-dependent adolescents relative to controls contrasts with studies of alcohol-dependent adults. In a study of access, availability, and efficiency of verbal information processing, alcohol-dependent adults demonstrated comparable recall relative to controls (Nixon and Bowlby, 1996). One possible explanation for this developmental difference is that deficits in recall may be compensated over time, whereas efficiency of recall may become increasingly impaired with continued years of drinking.

The association between visuospatial functioning and substance withdrawal found in the present study was also reported by Tapert and Brown (1999) using other statistical procedures. Youths who experienced alcohol-withdrawal symptoms performed more poorly on tests of visual motor integration and visuoperception. These functions appeared more related to withdrawal histories than to other indices of substance involvement. A complex substitution task involving speeded scanning and processing was performed significantly slower in the alcohol-dependent sample, as reported in studies of alcohol-dependent adults (e.g., Brandt et al., 1983).

TABLE 7. INTERCORRELATIONS BETWEEN RETENTION RATES, MOOD, AND SUBSTANCE INVOLVEMENT IN ALCOHOL-DEPENDENT AND COMPARISON ADOLESCENTS (N − 57)

Variable	1	2	3	4	5	6	7
1. CVLT-C retention rate							
2. Visual Reproduction retention rate	0.34*						
3. POMS Depression scale	− 0.26	0.41**					
4. Drinking episodes per month	0.02	− 0.08	0.38**				
5. DSM-IV Alcohol Dependence criteria	− 0.17	− 0.30*	0.49**	0.67**			
6. Alcohol withdrawal symptoms, lifetime	− 0.22	− 0.34*	0.58**	0.54**	0.57**		
7. Alcohol withdrawal symptoms, recent	− 0.04	− 0.07	0.33*	0.69**	0.51**	0.73**	

* p<0.05;** p<0.01

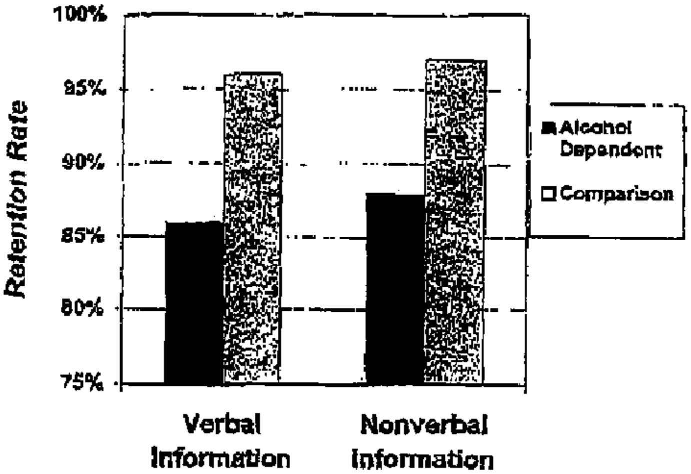


Fig. 1. Retention rate of verbal ($p < 0.05$) and nonverbal ($p < 0.01$) information over a delay period for alcohol-dependent and comparison adolescents.

Vocabulary and Information scores were lower in the alcohol-dependent sample. Environmental, economic, or family factors can adversely affect language functioning (e.g., Rourke et al., 1983). Language skills may have been inferior among alcohol-dependent adolescents because substance use prevented adequate attendance, attention, and/or participation in or processing of educational experiences. Alternatively, verbal IQ deficits that commonly mark academic problems and conduct disorder (review Moffitt, 1993) may have been associated with CNS differences that predated the use of alcohol. The association between tests of language functioning and alcohol involvement differentiated these adolescent findings from those of adult alcoholics.

The present study has several limitations. First, the carefully selected but small sample size prohibited exploration of gender and family history differences. Second, the use of other drugs may have independently affected cognitive performance (e.g., Beatty et al., 1997), but could not be explored in this relatively small sample. Third, there was no recognition trial on the nonverbal memory test, so we cannot distinguish between pictorial retention and retrieval processes. Fourth, although a relationship between alcohol dependence and NP difficulties was indicated by this and other cross-sectional studies, the directionality can be determined only by longitudinal studies. Although protracted alcohol or drug involvement may cause NP impairment, cognitive deficits may also be a risk factor or marker for the development of substance use disorders. For example, aggressive youths (Giancola et al., 1998) and those with family histories of alcohol dependence (Harden and Pihl, 1995; Najam et al., 1997) have demonstrated executive and language dysfunction and self-regulation deficiencies (Henry et al., 1996) before the onset of substance use. Although not exclusively an alcohol-dependent sample, one longitudinal study has suggested that continued substance involvement in adolescence leads to greater neurocognitive difficulties (Tapert and Brown, 1999).

In summary, these results, taken with other studies (Giancola et al., 1998; Moss et al., 1994; Tapert and Brown, 1999; Tarter et al., 1995), suggest that NP deficits are detectable among middle-aged adolescents with histories of extensive alcohol use. Limitations in the retrieval of recently acquired information put alcohol-dependent adolescents at risk for falling farther behind in school, thus compounding their risk for social problems (Newcomb and Bentler, 1988). Treatment programs may improve outcomes by measuring teens' memory capacities and using efficacious methods of presenting new information that consider impaired retention. Future studies could determine if multi-modal learning, repetition, and active learning procedures (e.g., role playing) help to successfully teach coping skills and appraisal of post-treatment relapse risks (Myers et al., 1993; Roehrich and Goldman, 1993; Tapert et al., 1999).

Deficits on visuospatial and retention measures suggest that underlying brain mechanisms may be affected by ethanol exposure, even after 3 weeks of abstinence. These results share a consistent pattern with adult studies in that verbal and visual memory deficits suggest potential mesial temporal lobe, caudate nucleus, and/or diencephalic damage, regions implicated in studies of adult alcohol-dependent patients (e.g., Jernigan et al., 1991). Overall, lifetime alcohol withdrawal symptoms were associated with poorer retrieval functioning (mesial temporal lobe and diencephalic regions and frontal-subcortical circuits), whereas recent withdrawal was associated with lower levels of visuospatial functioning (frontal-parietal regions). Structural and functional neuroimaging studies may help examine these hypotheses.

ACKNOWLEDGMENT

Appreciation is expressed to San Luis Roy Hospital, Mesa Vista Hospital, Harborview Medical Center, and Scripps Memorial Hospital for their participation in the project.

REFERENCES

Ann Psychiatric. Association (1987) Diagnostic and Statistical Manual of Mental Disorders (3rd Edition, Revised). American Psychiatric Press, Washington, D.C.

Beatty WW, Blanco CR., Raines KA, Nixon SJ (1997) Spatial cognition in alcoholics: lnfluence of concurrent abuse of other drugs. Drug Alcohol Depend 44:167-174.

Benton AL, Hamsher K. Varney NR, Spreen O (1983) Contributions to Neuropsychological Assessment: A Clinical Manual. Oxford University Press, New York.

Brandt J, Butters N, Ryan C, Bayog R (1983) Cognitive loss and recovery in long-term alcohol abusers. Arch Gen Psychiatry 40:435-442.

Brown SA, Creamer VA, Stetson PA (1987) Adolescent alcohol expectancies in relation to personal and parental drinking patterns. J Abnorm Psychol 96:117-121.

Brown SA, Gleghorn AA, Schuckit MA, Myers MG, Mott MA (1996) Conduct disorder among adolescent alcohol and drug abusers. J Stud Alcohol 57:314-324.

Brown SA, Myers MG, Lippke L, Tapert SF, Stewart DG. Vik PW (1998) Psychometric evaluation of the Customary Drinking and Drug Use Record (CDDR): A measure of adolescent alcohol and drug involvement. J Stud Alcohol 59:427-438.

Brown SA, Myers MG, Mott MA, Vik PW (1994) Correlates of success following treatment for adolcscent substance abuse. Applied & Preventive Psychology 3:61-73.

Brown SA, Schuckit MA (1988) Changes in depression among abstinent alcoholics. J Stud Alcohol 49:412-417.

Butters N, Delis DC, Lucas JA (1995) Clinical assessment of memory disorders in amnesia and dementia. Annu Rev Psychol 46:493-523.

Cahalan D (1970) Problem Drinkers. Jossey-Bass, San Francisco.

Defillippis NA, McCampbell E (1979) the Booklet Category Test. Psychological Assessment Resources, Odessa, FL.

Delis DC, Kramer JH, Kaplan F., Ober BA (1994) Manual for the California Verbal Learning Test Manual-Children's Version. Psychological Corporation, San Antonio.

Eckardt MJ, Campbell GA, Marietta CA, Majchtrowicz E. Rawlings RR, Weight FF (1992) Ethanol dependence and withdrawal selectively alter localized cerebral glucose utilization. Brain Res 584:244-250.

Fein G, Meyerhoff DJ, Di Sclafani V, Ezekiel F. Poole N, MacKay S, Dillon WP, Constuns JM, Weiner MW (1994) ^{1}H magnetic resonance spectroscopic imaging separates neuronal from glial changes in alcohol-related brain atrophy, in Alcohol and Glial Cells (Lancaster FE ed), pp227-241, National Institutes of Health, Bethesda, MD.

Ghahramani S (1996) Fundumentals of Probability, Prentice-Hall, Upper Saddle River, NJ.

Giancola PR, Mezzich AC. Tarter RE (1998) Disruptive, delinquent and aggressive behavior in female adolescents with a psychoactive substance use disorder: Relation to executive cognitive functioning. J Stud Alcohol 59:560-567.

Grant I (1987) Alcohol and the brain: Neuropsychological correlates, J Consult Clin Psychol 55:310-324.

Grant I, Adams KM, Reed R (1984) Aging, abstinence, and medical risk factors in the prediction of neuropsychologic deficit among long-term alcoholics. Arch Gen Psychiatry 41:710-718.

Harden PW, Pihl RO (1995) Cognitive function, cardiovascular reactivity, and behavior in boys at high risk for alcoholism. J Abnorm Psychol 104:94-103.

Harris JC (1995) Developmental Neuropsychiatry; Fundumentals. vol 1, Oxford University Press, New York.

Henry B, Caspi A, Moffitt TE, Silva PA (1996) Temperamental and familial predictors of violent and nonviolent criminal convictions: Age 3 to age 18. Dev Psychol 32:614-623.

Hultenlocher PR (1990) Morphometric study of human cerebral cortex development. Neuropsychologia 28:517-527.

Jernigan TL, Butters N, DiTraglia G, Schafer K, Smith T, Irwin M, Grant I, Schuckit M. Cermak LS (1991) Reduced cerebral grey matter observed in alcoholics using magnetic resonance imaging. Alcohol Clin Exp Res 15:418-427.

Kaplan E, Goodglass H, Weintraub S (1983) The Boston Naming Test. Lea and Febiger, Philadelphia.

Kaufman AS (1975) Factor analysis of the WISC-R at 11 age levels between 6½ and 16½ years. J Consult Clin Psychol 29:354-357.

Kolb B, Fantie B (1989) Development of the child's brain and behavior, in Handbook of Clinical Child Neuropsychology (Reynolds CR, Fletcher-Janzen E, eds), pp 17-39, Plenum, New York.

Kwon LM, Rourke SB, Grant (1997) lntermanual differences on motor and psychomotor tests in alcoholics; No evidence for selective right-hemisphere dysfunction. Percept Mot Skills 84:403-414.

Lu KH (1974) The indexing and analysis of drug indulgence. Int. J Addict 9:785-804.

McNair DM, Lorr M, Droppleman LF (1981) Manual for the Profile of Mood States. Educational and Industrial Service, San Diego.

Moffitt TE (1993) The neuropsychology of conduct disorder. Dev Psychopathol 5:135-151.

Moss HB, Kirisci L, Gordon HW, Tarter RE (1994) A neuropsychologic profile of adolescent alcoholics. Alcohol Clin Exp Res 18:159-163.

Myers MG, Brown SA, Mott MA (1993) Coping as a predictor of adolescent substance abuse treatment outcome. J Subst Abuse 5:15-29.

Najam N, Tarter RE, Kirisci L (1997) Language deficits in children at high risk for drug abuse. J Child Adolescent Sub Abuse Psychol 6:69-80.

Newcomb MD, Bentler PM (1988) Impact of adolescent drug use and social support on problems of young adults: A Longitudinal study. J Abnorm Psychol 97:64-75.

Nicolas JM, Catafau AM, Estruch R, Lomena FJ, Salamero M, Herranz R. Monforie R, Cardenal C, Urbano-Marquez A (1993) Regional cerebral blood flow-SPECT in chronic alcoholism: Relation to nueuropsychological testing. J Nuel Med 34:1452-1459.

Nixon SJ, Bowlby D (1996) Evidence of alcohol-related efficiency deficits in an episodic learning task. Alcohol Clin Exp Res 20:21-24.

Reitan RM, Wolfson D (1985) The Halstead-Reitan Neuropsychological Test Battery. Neuropsychology Press, Tucson.

Roehrich L, Goldman MS (1993) Experience-dependent neuropsychological recovery and the treatment of alcoholism. J Consult Clin Psychol 61:812-821.

Rourke BP, Bakker DJ, Fisk JL, Strang JD (1983) Child Neuropsychology: An Introduction to Theory, Research, and Clinical Practice, Guilford, New York.

Schuckit MA, Irwin M. Howard T Smith T (1988) A structured diagnostic interview for identification of primary alcoholism: A preliminary evaluation. J Stud Alcohol 49:93-99.

Skinner HA, Horn JL (1984) Alcohol Dependence Scale (ADS) User's Guide. Addiction Research Foundation, Toronto.

Stewart DG, Brown SA (1995) Withdrawal and dependency symptoms among adolescent alcohol and drug abusers. Addiction 90:627-635.

Sullivan EV, Marsh L, Mathalon DH, Lim KO, Pfefferbaum A (1996) Relationship between alcohol withdrawal seizures and temporal lobe white matter volume deficits, Alcohol Clin Exp Res 20:348-354.

Tapert SF, Brown SA (1999) Neuropsychological correlates of adolescent substance abuse: Four year outcomes. J Int Neuropsychol Soc 5:475-487.

Tapert SF, Brown SA, Myers MG, Granholm E (1999) The role of neurocognitive abilities in coping with adolescent relapse to alcohol and drug use, J Stud Alcohol 60:500-508.

Tarter RE, Mezzich AC, Hsieh YC, Parks SM (1995) Cognitive capacity in female adolescent substance abusers. Drug Alcohol Depend 39:15-21.

Wechsler D (1945) Wechsler Memory Scale. Psychological Corporation, New York.

Wechsler D (1974) Manual for the Wechsler Intelligence Scale for Children (Revised). Psychological Corporation, San Antonio.

Witkin H. Ohman P, Raskin E, Karp S (1971) Embedded Figures Test. Consulting Psychologists, Palo Alto, CA.

Neural Response to Alcohol Stimuli in Adolescents With Alcohol Use Disorder

Susan F. Tapert, PhD; Erick H. Cheung, BS; Gregory G. Brown, PhD; Lawrence R. Frank, PhD; Martin P. Paulus, MD; Alecia D. Schweinsburg, BA; M. J. Meloy, PhD; Sandra A. Brown, PhD

Background: Cue reactivity studies in alcohol-dependent adults have shown atypical physiological, cognitive, and neural responses to alcohol-related stimuli that differ from the responses of light drinkers. Cue reactivity and its neural substrates are unclear in youth. We hypothesized that teens with alcohol use disorder would show greater brain response than nonabusing teens to alcohol images relative to neutral beverage images in limbic and frontal brain regions.

Methods: We tested the hypotheses in a cross-sectional functional magnetic resonance imaging study. Adolescents aged 14 to 17 were recruited from local high schools. Teens with alcohol use disorders (n=15) and demographically similar infrequent drinkers (n=15) met strict exclusion criteria (no left-handedness or neurological, other psychiatric, or other substance use disorders). Diagnoses were determined by means of structured and semistructured clinical interviews. Subjects were shown pictures of alcoholic and nonalcoholic beverage advertisements during blood oxygen level–dependent functional magnetic resonance imaging. Self-reports of craving were obtained before and after cue exposure.

Results: Teens with alcohol use disorders showed substantially greater brain activation to alcoholic beverage pictures than control youths, predominantly in the left anterior, limbic, and visual system areas ($P<.05$; cluster threshold, 515 μL). The degree of brain response to the alcohol pictures was highest in youths who consumed more drinks per month and reported greater desires to drink.

Conclusions: These results confirm previous studies by demonstrating an association between the urge to drink alcohol and blood oxygen use in areas of the brain previously linked to reward, desire, positive affect, and episodic recall. This study extends this relationship to adolescents with relatively brief drinking histories using visual alcohol stimuli, and suggests a neural basis for response to alcohol advertisements in youths with drinking problems.

Arch Gen Psychiatry. 2003;60:727-735

DRUG CRAVING is often described as the subjective experience of an intense desire for an addictive substance.[1,2] It may occupy cognitive resources and influence substance use decisions,[3] but it is difficult to measure objectively. Cue reactivity is an observable correlate of craving[4] that has been demonstrated in alcohol-dependent adults[5-7] through physiological changes such as increased heart rate or salivation on exposure to alcohol-related words, pictures, scents, tactile cues, or imaginal stimuli.[6,8,9] Alcohol-dependent adults show difficulty shifting attention away from alcohol-related stimuli,[10] and, consequently, substance cues can interfere with the deployment of effective coping responses.[11,12] Although cue reactivity has not been studied in adolescents, substance-dependent youths show difficulty implementing coping skills when substance cues are salient.[13]

Knowledge about the neural systems subserving cue reactivity and craving has expanded recently.[14] Alcohol-dependent adults given small amounts of alcohol showed increased blood flow in the right caudate nucleus that was positively correlated with self-reports of alcohol craving.[15] Left prefrontal[16-19] and bilateral orbitofrontal cortices[17,20-24] have commonly activated in response to substance cues among adults. Some studies have reported bilateral activation changes in the amygdala,[16,17,21,22] but more have shown a left and bilateral anterior cingulate response that correlates with craving.[16-18,20-22,25] The reward-related nucleus accumbens appears responsive to substance cues and is related to craving reports, bilaterally[16,25] and on the left,[26] although some studies could not precisely localize this small region. In the first functional

From the Psychology Service (Drs Tapert, G. G. Brown, and S. A. Brown), Radiology Service (Dr Frank), and Psychiatry Service (Drs Paulus and Meloy), Veterans Affairs San Diego Healthcare System, and the Departments of Psychiatry (Drs Tapert, G. G. Brown, Paulus, and S. A. Brown and Mr Cheung), Radiology (Dr Frank), and Psychology (Ms Schweinsburg and Dr S. A. Brown), University of California–San Diego.

Table 1. [illegible]

	AUD Group (n = 15)	Controls (n = 15)	P Value
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
WISC-III [illegible] score	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	.42
White, No. [illegible]	[illegible]	[illegible]	.14
[illegible] No. [illegible]	[illegible]	[illegible]	.92
CBCL [illegible] T score	[illegible]	[illegible]	.41
CBCL internalizing T score	[illegible]	[illegible]	[illegible]
Beck Depression Inventory score	[illegible]	[illegible]	[illegible]
Spielberger [illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	.49
[illegible]	[illegible]	[illegible]	.69
[illegible]	[illegible]	[illegible]	<.001
[illegible]	[illegible]	[illegible]	<.001
[illegible]	[illegible]	[illegible]	<.001
[illegible]	[illegible]	[illegible]	<.001
DAQ [illegible]	[illegible]	[illegible]	<.001
DAQ [illegible] desire scale	[illegible]	[illegible]	<.001

Abbreviations: AUD, alcohol use disorder; CBCL, Child Behavior Checklist; DAQ, Desires for Alcohol Questionnaire; WISC-III, Wechsler Intelligence Scale for Children-III.

*Unless otherwise indicated, data are expressed as mean (SD).

†Indicates no first- or second-degree biological relative with alcohol or other drug abuse or dependence.

‡Normed to high school sample for each sex.

§Scoring is described in the "State Measures" subsection of the "Methods" section.

magnetic resonance imaging (fMRI) study of pictoral alcohol cues. George and colleagues[19] reported a thalamic and left prefrontal response to alcoholic relative to nonalcoholic beverage pictures (hereafter referred to as alcohol and nonalcohol pictures, respectively) among alcohol-dependent adults compared with matched control subjects. Our group previously studied brain responses of women aged 18 to 25 years to alcohol- and nonalcohol-related words.[26] Alcohol-dependent young women demonstrated significantly more blood oxygen level-dependent (BOLD) response than controls during alcohol word presentation relative to neutral words in the anterior cingulate, left prefrontal cortex, bilateral insular gyri, and subcallosal cortex, which houses the nucleus accumbens. However, group differences were relatively modest.[26]

To summarize, a sizable literature reports that adults with substance use disorders demonstrate atypical reactions to stimuli that have been conditioned to addictive substances.[27] However, the brain regions reported to subserve cue reactivity have been somewhat inconsistent, due in part to differing imaging techniques, stimuli, and populations, as previously reviewed.[26] Cue-induced brain changes have not been studied in adolescents, although substance-dependent youths report substantial levels of craving,[28] posttreatment relapses among adolescents are associated with exposure to substance-related cues,[29] and youths report exposure to alcohol cues through advertising an average of 30 times per month.[30] To assess the neural substrates of cue reactivity in youth, we studied adolescents aged 14 to 17 years, used pictures instead of words to more directly elicit cue reactivity, and used personally relevant alcohol stimuli. It was hypothesized that adolescents with alcohol use disorders (AUDs) would exhibit more brain activity in response to alcohol cues relative to teens without drinking problems, particularly in anterior cingulate, prefrontal, orbitofrontal, and subcallosal cortices. In addition, we hypothesized that desires to drink would correlate with levels of activation.

METHODS

PARTICIPANTS

Recruitment flyers were distributed at local high schools. When a teen telephoned in response, a brief interview preliminarily ascertained eligibility, then the legal guardian was asked exclusionary questions. After a description of the study, written informed consent and assent, approved by the University of California–San Diego Institutional Review Board, were obtained from parents and adolescents. The teen was administered a 90-minute detailed screening interview, including the Family History Assessment Module screener,[31] to assess family history of substance use and psychiatric diagnoses. We used the Customary Drinking and Drug Use Record[32] to assess substance use and abuse/dependence criteria, and the Diagnostic Interview Schedule for Children to assess adolescent psychiatric diagnoses.[33] The same measures were administered to the parent by a separate interviewer for corroboration. In cases of discrepancies, additional data were obtained or data were coded to represent the lower level of functioning or presence of problems.

Exclusionary criteria were a history of a *DSM-IV* psychiatric or substance disorder other than AUD, neurological illness, head trauma with loss of consciousness for longer than 2 minutes, serious medical problems and learning disability; current use of medications that could affect the central nervous system; smoking more than 4 cigarettes per day; significant maternal drinking during pregnancy (≥4 drinks per occasion or ≥7 drinks per week); family history of bipolar I or psychotic disorders; inadequate English skills; sensory problems; left-handedness; and irremovable metal on the body. Because of high comorbidity with substance use disorders,[34,35] teens meeting criteria for conduct disorder (*n* = 2) were not excluded.

Participants with AUD (*n* = 15) met current *DSM-IV* criteria for alcohol abuse or dependence, and normal controls (*n* = 15) had very limited experience with alcohol or other drugs. Each group contained 6 girls and 9 boys with an average age of 16 years, mostly from upper middle-class families (**Table 1**). Based on neuropsychological tests administered the day of scanning, participants in both groups were above average intellectually. Youths with AUD typically drank 6 drinks each weekend night and had met criteria for alcohol abuse (*n* = 7) or dependence (*n* = 8) for 1 to 2 years. Youths with AUD reported higher levels of depressed mood and nervousness before scanning than controls, although all were in the reference range except 1 participant with AUD (Beck Depression Inventory score, 19; Spielberger Anxiety T score, 64). After excluding this participant, groups had similar Beck Depression Inventory scores. Subjects with AUD still showed more anxiety, although within the normal range (Spielberger Anxiety T score, 44).

MEASURES

Structured Clinical Interview

Teens and parents were administered a structured clinical interview[36] by separate psychometrists covering demographic, medical, academic, family, and social functioning information. Parents were asked about the teen's developmental history and familial socioeconomic status[37] and administered the Child Behavior Checklist.[38]

Substance Use and Diagnoses

Substance involvement and use disorder diagnoses were assessed with the Customary Drinking and Drug Use Record,[35] which collects lifetime and past 3-month information on alcohol, nicotine, and other drug use and assesses *DSM-IV* abuse and dependence criteria,[39,40] withdrawal symptoms, and other negative consequences of substance use. Strong psychometric properties have been demonstrated in adolescents.[35,41] The Timeline Follow-back[42] provided substance use patterns for the previous 30 days. All participants submitted urine samples for drug toxicologic screening.

Neuropsychological Testing

A 2-hour neuropsychological test battery was administered by a trained psychometrist (A.D.S.). The battery covered attention, working memory, learning and memory, and executive, visuospatial, and language functioning. General intellect was estimated with the Wechsler Intelligence Scale for Children-III Vocabulary subtest,[43] which correlates highly with full-scale IQ.[43,44]

State Measures

The Beck Depression Inventory[45] and state scale of the Spielberger State-Trait Anxiety Inventory[46] assessed mood at the time of scanning. The Stanford Sleepiness Scale measured alertness immediately before and after scanning with self-reported ratings (1 indicates alert; 7, almost asleep).[47]

Drinking Urge

Alcohol craving was evaluated immediately before and after scanning with a 100-mm visual analog scale for rating the urge to drink[48] and the Desires for Alcohol Questionnaire (DAQ).[49] The DAQ yields the following 3 factors: reinforcing effects, strong desires to drink, and mild desires to drink.

PROCEDURES

Several days before scanning, participants were asked for their preferred alcoholic and nonalcoholic beverage brands and what brands they had consumed in the past year to guide individualized beverage picture selection. Participants were asked to abstain from alcohol and other drugs for at least 48 hours before imaging. The most recent drinking reported was 72 hours before scanning, and no withdrawal symptoms were reported or evident in any participant the day of scanning. All imaging sessions occurred on Thursdays from 8 to 10 PM to maximize recovery from weekend binge drinking and maintain consistent circadian influence across subjects. Once subjects arrived for the single assessment session, Breathalyzer (Intoximeter, Inc, St Louis, Mo) and urine samples were collected for drug toxicologic screening and, for girls, pregnancy screening. No participant had a measurable breath alcohol concentration, and only 1 participant, who had disclosed recent marijuana use (3 days before), had positive findings in a urine sample.

Teens underwent assessment by a trained bachelor-level psychometrist of the same sex (E.H.C. or A.D.S.). Throughout scheduling and the assessment session, adolescents were told about the imaging procedures and the importance of keeping as still as possible during scanning. This was emphasized again just before scanner entry by the MRI technologist. After lying in the scanner, a soft cloth was placed on the participant's forehead, which was then taped to the head coil to minimize head motion, and a response box was placed in the subject's right hand.

The scanning protocol consisted of high-resolution structural imaging (inversion-recovery-prepared, T1-weighted, sagittally acquired 3-dimensional spiral fast spin echo[30]; 16 interleaves; echo-train length, 8; repetition time, 2000 milliseconds; inversion time, 700 milliseconds; echo spacing, 15.6 milliseconds; echo time, 15.6 milliseconds; field of view, 240 mm; in-plane resolution, 0.9375 × 0.9375 mm; through-plane resolution, 1.328 mm; 128 continuous slices; acquisition time, 8 minutes 36 seconds) and axially-acquired T2*-weighted spiral gradient recall echo imaging (repetition time, 3000 milliseconds; echo time, 40 milliseconds; flip angle, 90°; field of view, 240 mm; 20-21 axial slices covering the whole brain; slice thickness, 7 mm; reconstructed in-plane resolution, 1.875 × 1.875 mm; 138 repetitions; acquisition time, 6 minutes 54 seconds). Spiral imaging was used because it helps reduce the effects of motion on time series acquisitions.[31,32]

During fMRI data collection, an alcohol pictures task was administered. This task sequentially presented 20 alcohol and 20 nonalcohol pictures matched by color, visual complexity, and presence of people. The images were selected from a bank of more than 200 advertisements scanned from youth-oriented popular magazines (eg, *Rolling Stone, Spin, Sports Illustrated,* and *Cosmopolitan*) or downloaded from the Internet. A personalized set of images was selected for each adolescent, on the basis of his or her alcoholic and nonalcoholic beverage preferences and experiences, to ensure familiarity with the stimuli. To maintain focus on the task without drawing attention to picture content, instructions consisted of the following: "Press 1 if the picture contains a person; press 2 if there is no person" (30% in each condition contained a person). The task alternated between 30-second blocks of each condition (10 trials per block; 2500-millisecond stimulus presentation and 500-second interstimulus interval), with fixation periods at the beginning, middle, and end (**Figure 1** shows task design and stimulus samples).

DATA ANALYSIS

Data were processed and analyzed with the Analysis of Functional NeuroImages package.[33] First, we applied to the time series data a 3-dimensional motion-correction algorithm that aligned each volume in the time series to a selected base volume[34] and estimated 3 rotational and 3 displacement parameters for each participant. To determine whether bulk motion differed between groups, each subject's absolute mean for each of the 6 motion parameters across the time series was compared in 1-way analyses of variance (ANOVAs). Controls required significantly more motion correction for 2 parameters (roll, 0.05 vs 0.03 mm [$P = .02$]; left displacement, 0.04 vs 0.02 mm [$P = .05$]) and showed more variability in motion during the time series for 2 parameters (roll SD, 0.05 vs 0.04 [$P = .04$]; yaw SD, 0.06 vs 0.05 [$P = .02$]), although the magnitude of these differences was quite small. To estimate task-correlated motion, the 6 parameters were correlated with the task reference vector across the time series for each subject. The median correlations for the AUD group were −0.069, 0.122, −0.011, −0.006, −0.067, and −0.037; for controls, −0.034, 0.059, 0.003, 0.042, −0.135, and −0.032 for roll, pitch, and yaw rotations and superior, left, and posterior displacements, respectively. Task-correlated values were compared between groups using Spearman correlations ($P > .18$ for all).

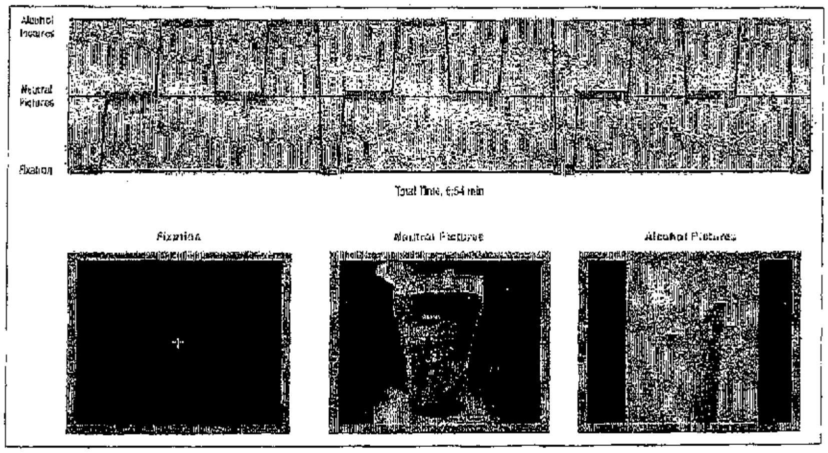


Figure 1. Alcoholic beverage pictures task design and stimuli samples.

Next, the time series data were correlated with a set of 7 task reference vectors. These consisted of 1 seed reference function representing the alternating conditions during the time course of the task (depicted in Figure 1), and the same reference vector shifted in 1-second increments 6 times forward to account for delays in hemodynamic response,[35] while covarying for linear trends and the estimated degree of motion (to control for spin history effects). Only the reference vector producing the highest correlation with the time course data was used, yielding fit coefficients for every subject in each voxel representing the correspondence between the observed and hypothesized signal. Each participant's imaging results were transformed into standard[36] coordinates, and the functional map was resampled into isotropic voxels (3.5 mm^3). We applied a spatial smoothing Gaussian filter (full width at half maximum, 3.5 mm) to manage individual variability in gyral structure. To test hypotheses, an independent-samples *t* test ($\alpha = .05$, 2-tailed) compared groups on BOLD response contrast across the time series, essentially testing a group × condition interaction. Urge scores were correlated with BOLD response contrast for each voxel. Type 1 error was controlled by requiring that voxels surpass the specified α and compose clusters of more than 515 μL,[37,38] yielding a voxelwise *P* of .00002 and a clusterwise *P* of .032.

RESULTS

Response logging failed for 8 AUD group and 6 control participants. Using available data, groups did not differ between task conditions in reaction time (alcohol pictures, 805.76 vs 860.31 milliseconds; neutral pictures, 736.18 vs 840.83 milliseconds for AUD and control groups, respectively) or accuracy (alcohol pictures, 96% both groups; neutral pictures, 98% both groups). The AUD group reported significantly more desires to drink than controls for all 3 DAQ factors before and after scanning. However, no significant increases were found after scanning for either group on the DAQ or the visual analog scale scores. As a result, we averaged prescanning and postscanning DAQ scores for use in analyses.

Throughout the brain, the AUD group showed significantly more BOLD response than controls to alcohol pictures relative to neutral beverage pictures, particularly in the left hemisphere, including frontal and limbic regions ($P < .05$; effect sizes, 3.67-9.69). This included hypothesized regions (ie, the ventral anterior cingulate, prefrontal cortex, orbital gyrus, and subcallosal cortex) and other areas (eg, the inferior frontal gyrus, paracentral lobule, parahippocampus, amygdala, fusiform gyrus, temporal lobe, hypothalamus, posterior cingulate, precuneus, cuneus, and angular gyrus). In contrast, controls showed more BOLD response to alcohol pictures relative to neutral pictures than the AUD group in 2 right frontal regions ($P < .05$; **Table 2** and **Figure 2**). This analysis was rerun excluding the AUD participant with higher levels of depressed mood and anxiety. All regions listed in Table 2 remained significant except 2, and the AUD group showed more response to alcohol pictures in the left inferior parietal lobule (Brodmann area 39) than controls. The group × condition interactions were confirmed using the 3-dimensional ANOVA2 program of the Analysis of Functional NeuroImages,[34] comparing signals from alcohol and nonalcohol picture conditions relative to fixation for both groups. All regions listed in Table 2 were confirmed, except for the right inferior frontal gyrus and right lateral precuneus.

To understand the main effect of condition, we studied each group separately in single-sample *t* tests. The AUD group showed greater response to alcohol pictures relative to neutral pictures in 21 regions, whereas they showed increased response to neutral beverages in just 2 regions ($P < .05$). Controls had more response to alco-

[illegible]

Abbreviations: A, anterior; AUD, alcohol use disorder; BOLD, blood oxygen level–dependent; I, inferior; L, left; NA, not applicable; P, posterior; R, right; S, superior.

*N = 30.

†Indicates the maximum signal intensity correlation within the cluster.

‡Not replicated after the participant with the highest mood symptoms was excluded.

holic beverage pictures in 5 locations, yet more response to neutral pictures relative to alcoholic beverage pictures in 16 regions ($P < .05$). To examine the main effect of group, we contrasted the BOLD response between the alcoholic beverage pictures and fixation conditions. Both groups showed considerably more response to the alcoholic beverage pictures than to the fixation cross, but the AUD group showed a more extensive response contrast. However, this contrast and the contrast between neutral pictures and fixation revealed some BOLD response in the AUD group during fixation blocks, perhaps indicating continued reactivity to alcohol stimuli.

To test the relationship between self-reported desire to drink and brain response, the 3 DAQ factors (reinforcement, strong desires, and mild desires) were examined in regressions to predict the BOLD response contrast between the alcoholic and nonalcoholic beverage pictures for each group. Among those in the AUD group, the reinforcement factor did not predict variability in BOLD response contrast, but the strong desires factor predicted left temporal ($\beta = 16.15$) and right thalamic ($\beta = -22.88$) responses. The mild desires factor significantly and positively predicted 10 regions of enhanced BOLD response to alcoholic beverage pictures relative to neutral pictures in the AUD group (**Table 3**). Among controls, low reinforcement scores predicted more BOLD response contrast in the right posterior cingulate and temporal regions, and the strong and mild desires factors were unrelated to the BOLD response. To confirm these findings, we extracted each participant's signal intensity values from the regions that differed between groups (Table 2) and correlated these values with drinking and craving scores. For controls, only the following correlations were found: left temporal/fusiform BOLD signal contrast correlated with drinks consumed per month ($r = 0.56$ [$P = .03$]), and left parahippocampal/amygdalar signal correlated with mild desires to drink ($r = -0.55$ [$P = .03$]). For the AUD group, 4 regions correlated positively with drinks per month (left inferior frontal, $r = 0.51$ [$P = .04$]; left paracentral lobule/dorsal cingulate, $r = 0.59$ [$P = .02$]; right precuneus/cuneus, $r = 0.64$ [$P = .01$]; and right precuneus/posterior cingulate, $r = 0.76$ [$P = .001$]) (**Figure 3**), and 2 areas correlated negatively with reinforcement scores (right precuneus/cuneus, $r = -0.73$ [$P = .002$]; and right inferior frontal, $r = -0.53$ [$P = .04$]).

Because individuals with family histories of AUD tend to respond abnormally to alcohol and show other neural anomalies,[38-42] we compared brain responses to alcohol pictures between those in the AUD group with family histories that were positive (FHP) and negative (FHN) for AUD. The AUD-group teens with FHP ($n = 9$; 5 [56%] female) showed more BOLD response contrast between the alcoholic and nonalcoholic beverage pictures than the AUD-group teens with FHN ($n = 6$; 1 [17%] female), especially in the left posterior cingulate and prefrontal, orbital, and inferior temporal gyrus. Controls with FHP ($n = 9$; 3 [33%] female) showed more brain response to alcoholic beverage pictures relative to nonalcoholic beverage pictures than controls with FHN ($n = 6$; 3 [50%] female), particularly in the left paracentral, medial frontal, prefrontal, cuneus, and anterior cingulate areas. However, when comparing the 9 AUD-group teens with FHP and the 9 controls with FHP, the AUD group showed sub-

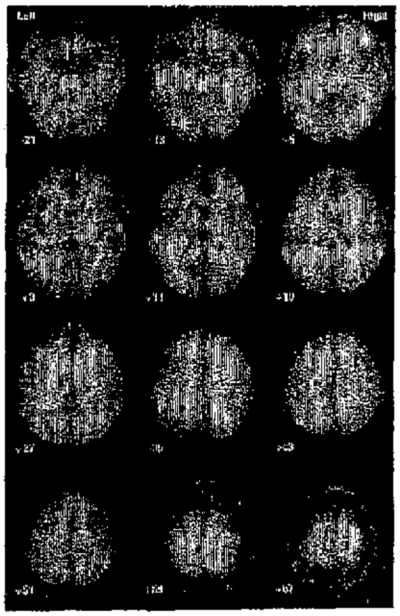


Figure 2. Functional magnetic resonance imaging (fMRI) results during alcoholic beverage picture trials relative to nonalcoholic beverage picture trials. Orange indicates where teens with alcohol use disorder ($n=15$) had more response than control subjects ($n=15$) to alcoholic beverage pictures. Blue shows where controls had more response to alcoholic beverage pictures (group $P<.05$; clusters, >515 µL). Numbers refer to axial slice positions. The fMRI results are displayed on averaged anatomic brain maps.

stantially more response to alcoholic beverage pictures throughout the brain. Similarly, the 6 AUD-group teens with FHN showed more brain response to alcohol pictures than the 6 controls with FHN, except in the right frontal pole and left dorsolateral prefrontal cortex.

In adolescence, sex differences in neuromaturation[63-65] influence affective response[66] and may relate to cue reactivity. We compared responses with alcohol pictures relative to nonalcohol pictures in boys and girls of the AUD and control groups. In the AUD group, girls ($n=6$) showed more brain response than boys ($n=9$) to alcohol pictures, particularly in the anterior cingulate and left prefrontal regions, whereas boys showed a strong response to alcohol pictures in the left orbital gyrus and bilateral paracentral gyri. No sex differences were apparent among controls.

COMMENT

Our results supported the hypothesis that adolescents with AUD produce more brain activity in response to alcohol cues than teens without drinking problems. This was specifically supported in the ventral anterior cingulate and subcallosal, prefrontal, orbital, and limbic regions, areas previously associated with reward and drug craving. In addition, we found increased response in posterior regions that may be critical to visual association, episodic recall, appetitive functions, and the formation of associations. In teens with alcohol abuse/dependence, mild desires to drink alcohol were associated with enhanced BOLD response in frontal and visual regions and diminished response in the ventral anterior cingulate.

These results are consistent with previous studies on alcohol and other drug cues. Like many neuroimaging studies of craving, we found an anterior cingulate response to substance cues among problem users.[16-18,20,22,25,26,67,68] These findings also support studies that found subcallosal cortex/nucleus accumbens,[16,25,26] orbitofrontal,[17,20-24] left prefrontal,[16-19,22,26,66] amygdala,[17,21] temporal,[17,23,67,69] and posterior cingulate[16,22,23] responses. The most similar design to ours is the 2001 study by George and colleagues.[19] Both studies found increased left prefrontal BOLD response in individuals with AUD during exposure to alcohol relative to nonalcohol pictures. Although our study did not replicate their thalamic activation, the hypothalamus of teens in our AUD group was more responsive to alcohol pictures than to nonalcohol pictures, whereas controls did not show such an effect.

The present study found larger areas of brain activation to alcohol pictures than the study by George et al.[19] Several dissimilarities between projects could account for these differences. First, youth tend to exhibit larger areas of BOLD response relative to adults across tasks[70,71] owing to regional specialization that develops throughout adolescence. Second, our study used personalized stimuli instead of a standard picture series. Many youths have used only certain alcoholic beverage types, and we wanted to ensure previous exposure to beverage pictures to maximize cue reactivity. Third, our study examined the whole brain, demonstrating group differences in posterior regions. Fourth, the current study repeated images, using 40 images, whereas George et al[19] used 56 pictures. This leaves the possibility that recognition might have affected results. Fifth, our pulse sequences collected data spirally in k-space, a technique that is less sensitive to motion artifact.[31-33] Finally, the larger sample size resulted in more statistical power to detect subtler effects.

These results confirm the findings of a recent study from our group[26] in which alcohol-related cues appeared to provoke increased BOLD response in the nucleus accumbens region among college-age women with AUD. However, the magnitude of response in the present study is much larger and involved the visual system, possibly due to the pictoral stimulus modality and younger developmental stage of participants. The role of the visual system in the response of heavy drinkers to pictoral alcohol cues was not predicted, but it merits consideration. Feature-based visual attention may serve as the earliest stage of cortical response to visual stimuli and is linked to substantial BOLD response in visual brain regions.[72] Because of personal experiences and affective responses, adolescents with AUD may have attended to a broader array of features in the alcohol images, involving more visual system neurons than were involved for controls. Future stud-

[illegible]

Abbreviations are explained in the first footnote to Table 2.
*N = 15.
†Indicates the maximum signal intensity group difference within the cluster.

ies could examine this hypothesis using eye-movement measures. The response of the AUD group to alcohol pictures in the ventromedial region (Brodmann area 47) corresponds to findings of decision-making studies[73,74] that showed the importance of this region for making selections based on reward contingencies.

Several limitations of the current study warrant consideration. First, teens did not report increased craving after the alcohol pictures task, whereas the adults in the study by George et al[19] did, suggesting that dynamic craving processes were not captured in the imaging sessions. Teens tend to drink in the absence of adults, so the MRI setting may have been antithetical to typical drinking situations, and youths may be less able to discriminate and report changes in craving than adults. Urge ratings were not collected during scanning, but 5 minutes before and after scanner entry. Second, adolescents with AUD had more extensive histories of other drug and nicotine use than did controls, although sex, ethnicity, and family history were comparable. Third, our use of personalized cues may diminish generalizability and comparability between participants, and it is possible that social aspects of some pictures produced different responses across participants. Within-subject designs are needed to compare the effects of individualized vs standard cues.[12] Fourth, although all participants had some familiarity with the stimuli presented, teens with AUD may have had more experience with the alcohol stimuli, so results may represent differential recall effects.

CONCLUSIONS

This fMRI study demonstrated that high school youths with alcohol abuse or dependence show widespread and intense brain activation in response to pictures of alcohol advertisements. These results suggest that, not only are liking and remembering alcohol advertisements associated with frequent drinking[76] and expecting to drink more,[77] but alcohol advertisements may have a strong effect on youths with established heavy drinking patterns as well as those with family histories of AUD, similar to how media depictions of aggression have detrimental effects on children with preexisting aggressive traits.[78] For young drinkers, this neural response may indicate that advertisement content has been conditioned with drinking experiences, and may reflect increasing salience of alcohol advertisements as drinking escalates. Fortunately, encouraging youths to evaluate advertisements and critique the intentions of advertisers appears to help counter the negative influences.[79,80] For teens in treatment for substance use disorders, research is needed to determine whether cue reactivity can be reduced and whether diminished response to cues predicts treatment success.

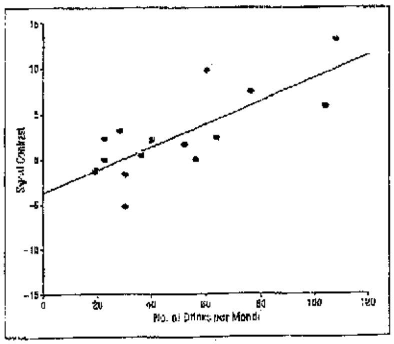


Figure 3. Blood oxygen level–dependent (BOLD) response signal contrast in the right precuneus/posterior cingulate region during exposure to alcoholic beverage pictures relative to nonalcoholic beverage pictures plotted as a function of drinks consumed per month for adolescents with alcohol use disorder (n=15; r=0.76 [P<.001]).

Submitted for publication August 23, 2002; final revision received February 6, 2003; accepted February 6, 2003.

This study was supported by grants R21 AA12519 and R01 AA13419 from the National Institute on Alcohol Abuse and Alcoholism, Bethesda, Md (Dr Tapert) and a Veterans Affairs Merit Grant (Dr Frank).

This study was presented in part at the annual meeting of the Research Society on Alcoholism, June 25, 2001; Montreal, Quebec.

We thank Lisa Eyler Zorrilla, PhD, Laura Santerre, Carmen Pulido, and Valerie Cestone for their contributions to this research.

Corresponding author: Susan F. Tapert, PhD, Psychology Service (116B), Veterans Affairs San Diego Healthcare System, 3350 La Jolla Village Dr, San Diego, CA 92161 (e-mail: stapert@ucsd.edu).

REFERENCES

1. Tiffany ST. A cognitive model of drug urges and drug-use behavior: role of automatic and nonautomatic processes. *Psychol Rev.* 1990;97:147-168.
2. Tiffany ST, Conklin CA. A cognitive processing model of alcohol craving and compulsive alcohol use. *Addiction.* 2000;95(suppl 2):S145-S153.
3. Anton RF, Drobes DJ. Clinical measurement of craving in addiction. *Psychiatr Ann.* 1999;29:553-560.
4. McDonough BE, Warren CA. Effects of 12-h tobacco deprivation on event-related potentials elicited by visual smoking cues. *Psychopharmacology.* 2001;154:282-291.
5. Monti PM, Rohsenow DJ, Hutchison KE. Toward bridging the gap between biological, psychobiological and psychosocial models of alcohol craving. *Addiction.* 2000;95(suppl 2):S229-S236.
6. Monti PM, Binkoff JA, Abrams DB, Zwick WR, Nirenberg TD, Liepman MR. Reactivity of alcoholics and nonalcoholics to drinking cues. *J Abnorm Psychol.* 1987;96:122-126.
7. Rohsenow DJ, Monti PM, Abrams DB, Rubonis AV, Niaura RS, Sirota AD, Colby SM. Cue elicited urge to drink and salivation in alcoholics: relationship to individual differences and relapse. *Adv Behav Res Ther.* 1992;14:195-210.
8. Stormark KM, Laberg JC, Nordby H, Hugdahl K. Alcoholics' selective attention to alcohol stimuli: automated processing? *J Stud Alcohol.* 2000;61:18-23.
9. McCusker CG, Brown K. Cue-exposure to alcohol-associated stimuli reduces autonomic reactivity, but not craving and anxiety, in dependent drinkers. *Alcohol Alcohol.* 1995;30:319-327.
10. Stormark KM, Field NP, Hugdahl K, Horowitz M. Selective processing of visual alcohol cues in abstinent alcoholics: an approach-avoidance conflict? *Addict Behav.* 1997;22:509-519.
11. Johnsen BH, Laberg JC, Cox WM, Vaksdal A, Hugdahl K. Alcoholic subjects' attentional bias in the processing of alcohol-related words. *Psychol Addict Behav.* 1994;8:111-115.
12. Stetter F, Ackermann K, Bizer A, Straube ER, Mann K. Effects of disease-related cues in alcoholic inpatients: results of a controlled "alcohol Stroop" study. *Alcohol Clin Exp Res.* 1995;19:593-599.
13. Myers MG, Brown SA, Mott MA. Coping as a predictor of adolescent substance abuse treatment outcome. *J Subst Abuse.* 1993;5:15-29.
14. Hommer DW. Functional imaging of craving. *Alcohol Res Health.* 1999;23:187-196.
15. Modell JG, Mountz JM. Focal cerebral blood flow change during craving for alcohol measured by SPECT. *J Neuropsychiatry Clin Neurosci.* 1995;7:15-22.
16. Breiter HC, Gollub RL, Weisskoff RM, Kennedy DN, Makris N, Berke JD, Goodman JM, Kantor HL, Gastfriend DR, Riorden JP, Mathew RT, Rosen BR, Hyman SE. Acute effects of cocaine on human brain activity and emotion. *Neuron.* 1997;19:591-611.
17. Grant S, London ED, Newlin DB, Villemagne VL, Liu X, Contoreggi C, Phillips RL, Kimes AS, Margolin A. Activation of memory circuits during cue-elicited cocaine craving. *Proc Natl Acad Sci U S A.* 1996;93:12040-12045.
18. Maas LC, Lukas SE, Kaufman MJ, Weiss RD, Daniels SL, Rogers VW, Kukes TJ, Renshaw PF. Functional magnetic resonance imaging of human brain activation during cue-induced cocaine craving. *Am J Psychiatry.* 1998;155:124-126.
19. George MS, Anton RF, Bloomer C, Teneback C, Drobes DJ, Lorberbaum JP, Nahas Z, Vincent DJ. Activation of prefrontal cortex and anterior thalamus in alcoholic subjects on exposure to alcohol-specific cues. *Arch Gen Psychiatry.* 2001;58:345-352.
20. Volkow ND, Wang G-J, Fowler JS, Hitzemann R, Angrist B, Gatley SJ, Logan J, Ding Y-S, Pappas N. Association of methylphenidate-induced craving with changes in right striato-orbitofrontal metabolism in cocaine abusers: implications in addiction. *Am J Psychiatry.* 1999;156:19-26.
21. Childress AR, Mozley PD, McElgin W, Fitzgerald J, Reivich M, O'Brien CP. Limbic activation during cue-induced cocaine craving. *Am J Psychiatry.* 1999;156:11-18.
22. Garavan H, Pankiewicz J, Bloom A, Cho JK, Sperry L, Ross TJ, Salmeron BJ, Risinger R, Kelley D, Stein EA. Cue-induced cocaine craving: neuroanatomical specificity for drug users and drug stimuli. *Am J Psychiatry.* 2000;157:1789-1798.
23. Sell LA, Morris JS, Bearn J, Frackowiak RS, Friston KJ, Dolan RJ. Neural responses associated with cue evoked emotional states and heroin in opiate addicts. *Drug Alcohol Depend.* 2000;60:207-216.
24. Wang GJ, Volkow ND, Fowler JS, Cervany P, Hitzemann RJ, Pappas NR, Wong CT, Felder C. Regional brain metabolic activation during craving elicited by recall of previous drug experiences. *Life Sci.* 1999;64:775-784.
25. Kilts CD, Schweitzer JB, Quinn CK, Gross RE, Faber TL, Muhammad F, Ely TD, Hoffman JM, Drexler KP. Neural activity related to drug craving in cocaine addiction. *Arch Gen Psychiatry.* 2001;58:334-341.
26. Tapert SF, Brown GG, Baratta MV, Brown SA. fMRI BOLD response to alcohol stimuli in alcohol dependent young women. *Addict Behav.* In press.
27. Weinstein A, Feldtkeller B, Malizia A, Wilson S, Bailey J, Nutt DJ. Integrating the cognitive and physiological aspects of craving. *J Psychopharmacol.* 1998;12:31-38.
28. Martin C, Kaczynski N, Maisto S, Bukstein O, Moss H. Patterns of *DSM-IV* alcohol abuse and dependence symptoms in adolescent drinkers. *J Stud Alcohol.* 1995;56:672-680.
29. Brown SA, Tapert SF, Tate SR, Abrantes AM. The role of alcohol in adolescent relapse and outcome. *J Psychoactive Drugs.* 2000;32:107-115.
30. Martin SE, Snyder LB, Hamilton M, Fleming-Milici F, Slater MD, Stacy A, Chen MJ, Grube JW. Alcohol advertising and youth. *Alcohol Clin Exp Res.* 2002;26:900-906.
31. Rice JP, Reich T, Bucholz KK, Neuman RJ, Fishman R, Rochberg N, Hesselbrock VM, Nurnberger JI Jr, Schuckit MA, Begleiter H. Comparison of direct interview and family history diagnoses of alcohol dependence. *Alcohol Clin Exp Res.* 1995;19:1018-1023.
32. Brown SA, Myers MG, Lippke L, Tapert SF, Stewart DG, Vik PW. Psychometric evaluation of the Customary Drinking and Drug Use Record (CDDR): a measure of adolescent alcohol and drug involvement. *J Stud Alcohol.* 1998;59:427-438.
33. Shaffer D, Fisher P, Lucas CP, Dulcan MK, Schwab-Stone ME. NIMH Diagnostic Interview Schedule for Children Version IV (NIMH DISC-IV): description, differences from previous versions, and reliability of some common diagnoses. *J Am Acad Child Adolesc Psychiatry.* 2000;39:28-38.
34. Brown SA, Gleghorn AA, Schuckit MA, Myers MG, Mott MA. Conduct disorder among adolescent alcohol and drug abusers. *J Stud Alcohol.* 1996;57:314-324.
35. Myers MG, Stewart DG, Brown SA. Progression from conduct disorder to antisocial personality disorder following treatment for adolescent substance abuse. *Am J Psychiatry.* 1998;155:479-485.
36. Brown SA, Vik PW, Creamer VA. Characteristics of relapse following adolescent substance abuse treatment. *Addict Behav.* 1989;14:291-300.
37. Hollingshead AB. *Two-Factor Index of Social Position.* New Haven, Conn: Yale University Press; 1965.
38. Achenbach TM. *Manual for the Child Behavior Checklist/4-18 and 1991 Profile.* Burlington: University of Vermont Dept of Psychiatry; 1991.
39. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Revised Third Edition.* Washington, DC: American Psychiatric Association; 1987.
40. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.* Washington, DC: American Psychiatric Association; 1994.
41. Stewart DG, Brown SA. Withdrawal and dependency symptoms among adolescent alcohol and drug abusers. *Addiction.* 1995;90:627-635.
42. Sobell LC, Sobell MB. Timeline Follow-back: a technique for assessing self-reported alcohol consumption. In: Raye Z, Litten JPA, ed. *Measuring Alcohol Consumption: Psychosocial and Biochemical Methods.* Totowa, NJ: Humana Press Inc; 1992:41-72.
43. Wechsler D. *Manual for the Wechsler Intelligence Scale for Children III.* San Antonio, Tex: Psychological Corp; 1993.
44. Sattler JM. *Assessment of Children, Third Edition Revised, Updated.* San Diego, Calif: JM Sattler; 1992.
45. Beck AT. *Beck Depression Inventory (BDI).* San Antonio, Tex: Psychological Corp; 1978.
46. Spielberger CD, Gorsuch RL, Lushene RE. *Manual for the State-Trait Anxiety Inventory.* Palo Alto, Calif: Consulting Psychologists Press; 1970.
47. Glenville M, Broughton R. Reliability of the Stanford Sleepiness Scale compared to short duration performance tests and the Wilkinson Auditory Vigilance Task. *Adv Biosci.* 1978;21:235-244.
48. Chick J, Howlett H, Morgan MY, Ritson B. United Kingdom Multicentre Acamprosate Study (UKMAS): a 6-month prospective study of acamprosate versus placebo in preventing relapse after withdrawal from alcohol. *Alcohol Alcohol.* 2000;35:176-187.
49. Love A, James D, Willner P. A comparison of two alcohol craving questionnaires. *Addiction.* 1998;93:1091-1102.
50. Wong EC, Luh WM, Buxton RB, Frank LR. Single slab high resolution 3D whole brain imaging using spiral FSE. In: *Proc Intl Soc Magn Reson Med.* 2000;8:683
51. Meyer CH, Hu BS, Nishimura DG, Macovski A. Fast spiral coronary artery imaging. *Magn Reson Med.* 1992;28:202-213.
52. Noll DC, Pauly JM, Meyer CH, Nishimura DG, Macovski A. Deblurring for non-2D Fourier transform magnetic resonance imaging. *Magn Reson Med.* 1992;25:319-333.
53. Cox RW. AFNI: software for analysis and visualization of functional magnetic resonance neuroimages. *Comput Biomed Res.* 1996;29:162-173.
54. Cox RW, Jesmanowicz A. Real-time 3D image registration for functional MRI. *Magn Reson Med.* 1999;42:1014-1018.
55. Bandettini PA, Jesmanowicz A, Wong EC, Hyde JS. Processing strategies for time-course data sets in functional MRI of the human brain. *Magn Reson Med.* 1993;30:161-173.
56. Talairach J, Tournoux P. *Coplanar Stereotaxic Atlas of the Human Brain: Three-Dimensional Proportional System: An Approach to Cerebral Imaging.* New York, NY: Thieme-Stratton Inc; 1988.

57. Forman SD, Cohen JD, Fitzgerald M, Eddy WF, Mintun MA, Noll DC. Improved assessment of significant activation in functional magnetic resonance imaging (fMRI): use of a cluster-size threshold. *Magn Reson Med*. 1995;33:636-647.
58. Ward BD. *Simultaneous Inference for fMRI Data*. Milwaukee, Wis: Biophysics Research Institute, Medical College of Wisconsin; 1997.
59. Schuckit MA, Gold EO, Croot K, Finn P, Polich J. P300 latency after ethanol ingestion in sons of alcoholics and in controls. *Biol Psychiatry*. 1988;24:310-315.
60. Schuckit MA, Smith TL. The relationships of a family history of alcohol dependence, a low level of response to alcohol and six domains of life functioning to the development of alcohol use disorders. *J Stud Alcohol*. 2000;61:827-835.
61. Ehlers CL, Schuckit MA. Evaluation of EEG alpha activity in sons of alcoholics. *Neuropsychopharmacology*. 1991;4:199-205.
62. Hada M, Porjesz B, Chorlian DB, Begleiter H, Polich J. Auditory P3a deficits in male subjects at high risk for alcoholism. *Biol Psychiatry*. 2001;49:726-738.
63. Giedd JN, Vaituzis AC, Hamburger SD, Lange N, Rajapakse JC, Kaysen D, Vauss YC, Rapoport JL. Quantitative MRI of the temporal lobe, amygdala, and hippocampus in normal human development: ages 4-18 years. *J Comp Neurol*. 1996;366:223-230.
64. Schlaepfer TE, Harris GJ, Tien AY, Peng L, Lee S, Pearlson GD. Structural differences in the cerebral cortex of healthy female and male subjects: a magnetic resonance imaging study. *Psychiatry Res*. 1995;61:129-135.
65. Caviness VS Jr, Kennedy DN, Richelme C, Rademacher J, Filipek PA. The human brain age 7-11 years: a volumetric analysis based on magnetic resonance images. *Cereb Cortex*. 1996;6:726-736.
66. Killgore WD, Oki M, Yurgelun-Todd DA. Sex-specific developmental changes in amygdala responses to affective faces. *Neuroreport*. 2001;12:427-433.
67. Wexler BE, Gottschalk CH, Fulbright RK, Prohovnik I, Lacadie CM, Rounsaville BJ, Gore JC. Functional magnetic resonance imaging of cocaine craving. *Am J Psychiatry*. 2001;158:86-95.
68. Daglish MRC, Weinstein A, Malizia AL, Wilson S, Melichar JK, Britten S, Brewer C, Lingford-Hughes A, Myles JS, Grasby P, Nutt DJ. Changes in regional cerebral blood flow elicited by craving memories in abstinent opiate-dependent subjects. *Am J Psychiatry*. 2001;158:1680-1686.
69. Schneider F, Habel U, Wagner M, Franke P, Salloum JB, Shah NJ, Toni I, Sulzbach C, Honig K, Maier W, Gaebel W, Zilles K. Subcortical correlates of craving in recently abstinent alcoholic patients. *Am J Psychiatry*. 2001;158:1075-1083.
70. Gaillard WD, Hertz-Pannier L, Mott SH, Barnett AS, LeBihan D, Theodore WH. Functional anatomy of cognitive development: fMRI of verbal fluency in children and adults. *Neurology*. 2000;54:180-185.
71. Thomas KM, King SW, Franzen PL, Welsh TF, Berkowitz AL, Noll DC, Birmaher V, Casey BJ. A developmental functional MRI study of spatial working memory. *Neuroimage*. 1999;10(pt 1):327-336.
72. Saenz M, Buracas GT, Boynton GM. Global effects of feature-based attention in human visual cortex. *Nat Neurosci*. 2002;5:631-632.
73. Bechara A, Damasio H. Decision-making and addiction, I: impaired activation of somatic states in substance dependent individuals when pondering decisions with negative future consequences. *Neuropsychologia*. 2002;40:1675-1689.
74. Elliott R, Rees G, Dolan RJ. Ventromedial prefrontal cortex mediates guessing. *Neuropsychologia*. 1999;37:403-411.
75. Gawin FH. The scientific exegesis of desire: neuroimaging crack craving. *Arch Gen Psychiatry*. 2001;58:342-344.
76. Casswell S, Zhang J-F, Silva PA. Alcohol in the mass media and drinking by adolescents: a longitudinal study. *Addiction*. 1994;88:1255-1263.
77. Wyllie A, Zhang JF, Casswell S. Responses to televised alcohol advertisements associated with drinking behaviour of 10-17-year-olds. *Addiction*. 1998;93:361-371.
78. Johnson JG, Cohen P, Smailes EM, Kasen S, Brook JS. Television viewing and aggressive behavior during adolescence and adulthood. *Science*. 2002;295:2468-2471.
79. Slater MD, Rouner D, Murphy K, Beauvais F, Van Leuven J, Domenech-Rodriguez MM. Adolescent counterarguing of TV beer advertisements: evidence for effectiveness of alcohol education and critical viewing discussions. *J Drug Educ*. 1996;26:143-158.
80. Agostinelli G, Grube JW. Alcohol counter-advertising and the media: a review of recent research. *Alcohol Res Health*. 2002;26:15-21.

Correction

Errors in Text and Table. In the Original Article by Meltzer et al titled "Clozapine Treatment for Suicidality in Schizophrenia: International Suicide Prevention Trial (InterSePT)," published in the January issue of the ARCHIVES (2003;60:82-91), the following errors occurred in the text and in a table: On page 83, right column, last paragraph, the first sentence should have read as follows: "Every potential type 1 end point (see the 'Outcome Definitions' subsection) was reviewed by all of the members of the SMB, and consensus was obtained." On page 84, right column, last paragraph, the second sentence (continuing to page 85) should have read as follows: "Putative explanatory variables, that is, factors that may have contributed to the primary end point in this model, included treatment; number of previous suicide attempts, active substance or alcohol abuse, pooled country, medical center, sex, and age group (18-32, 33-44, and ≥45 years) at baseline." On page 86, in Table 4, for the sideheading "Concomitant medications" and the subheading "Antidepressants," the number (percentage) for the clozapine group should have read "221 (46.1)," and for the olanzapine group, "258 (54.1)." In that same table, for the sideheading "Concomitant medications" and the subheading "Anxiolytics/soporifics," the number (percentage) for the clozapine group should have read "301 (62.8)," and the *P* value (95% confidence interval [CI] of the difference) (olanzapine minus clozapine) should have read ".03 (.01 to .13)." On page 87, left column, last paragraph, the third sentence should have read as follows: "On the other hand, when suicide attempts were rated for probability of success by the principal investigator, a 'high probability for success' of a completed suicide was found for 8 events in the clozapine group and 14 events in the olanzapine group." Also on page 87, right column, second paragraph, the third and fourth sentences should have read as follows: "The time in days to observe the first 70 patients with type 1 events was 185 days for the clozapine-treated patients and 126 days for the olanzapine-treated patients. A significant reduction in the 2-year event rate at the end of the study (olanzapine, 32.2% vs clozapine, 24.0%; 95% CI of the difference, 0.02-0.14; number needed to treat, 13) and a delay in time to event were demonstrated for clozapine-treated patients." The last sentence in that same paragraph should have read as follows: "The overall annualized rate for attempted suicides (including suicide deaths) was 7.2%, with a rate of 8.7% for olanzapine-treated patients and 5.8% for clozapine-treated patients." On page 88, left column, second paragraph, the first and second sentences should have read as follows: "Comparison of the overall use of concomitant medications for any reason, not only suicidality, shows that antidepressants were used more frequently in patients treated with olanzapine (54.1%) than in those treated with clozapine (46.1%) (*P*=.01) (Table 4). Anxiolytics and soporifics were also used more frequently in patients treated with olanzapine (69.4%) than in those treated with clozapine (62.8%) (*P*=.03)." Also on page 88, right column, in the "Comment" section, second paragraph, the first sentence should have read as follows: "Although the total number of suicide-related deaths was greater in the clozapine-treated group, this was not significant and, as indicated already, the study was not powered to evaluate this as an end point." Finally, on page 90, right column, second paragraph, the third sentence should have read as follows: "The InterSePT indicates that, on average, treatment of only 13 patients with clozapine rather than olanzapine will show benefit for clozapine to reduce suicidal behavior."

Senator DEWINE. Dr. Weissberg?

Mr. WEISSBERG. Good morning, Chairman DeWine and Senator Reed. I would like to thank you and Senator Kennedy for inviting me here today to comment as a psychologist, researcher and practitioner on effective substance abuse prevention for young people. I am Roger Weissberg, a professor of psychology and education at the University of Illinois at Chicago. I also serve as president of the Collaborative for Academic, Social and Emotional Learning, or CASEL. CASEL is a national organization of researchers and educators with the mission of establishing and disseminating evidence-based social and emotional learning as an essential part of preschool through high school education.

Recently, I co-chaired the American Psychological Association Task Force on Prevention and subsequently coedited a special issue of the American Psychologist on prevention that works for children and youth. Building from our findings, my testimony briefly highlights some research-based principles of effective prevention programming and offers a few key recommendations for prevention practice and policy.

As detailed in my written testimony, too many adolescents still engage in substance use, and significant percentages experience mental health problems, engage in other risky behaviors and lack social and emotional competencies such as stress management, problem solving and relationship skills. Given these high rates of substance use and related problem behaviors, our society urgently needs effective prevention and youth development approaches that are broadly disseminated and implemented with high quality.

A convincing research base now shows that well-designed and well-implemented school-based prevention programs can reduce substance use, enhance mental health and improve academic performance. The best school-based efforts are multiyear, skill-based and coordinated. They are school-wide and involve families and communities as partners. They help schools coordinate and unify categorically-funded prevention programs that are often fragmented. They offer developmentally and culturally appropriate instruction and clear learning objectives at each grade level.

In addition to preventing the negative, they promote the positive, such as teaching children to apply social and emotional skills and ethical values in daily life through service learning. They build connection to school through caring people and engaging classroom and school practices. They address the effective and social dimensions of academic learning. They provide high-quality staff development and administrative support, and they incorporate continuing evaluation and improvement. Finally, in this era of No Child Left Behind pressures for academic accountability, there is a new generation of research indicating school-based prevention can also enhance academic performance.

Unfortunately, despite scientific advances, there is still a wide gap between prevention research and practice. Most schools still do not use prevention programs of proven effectiveness. Even when schools select research-based programs, the majority of them do not implement those programs with fidelity and thus fail to obtain their expected benefits.

Furthermore, there is widespread fragmentation and lack of coordination among prevention programs. No matter how many prevention programs schools have, those programs will not achieve their intended effects when they are introduced in a categorical manner targeting one negative outcome at a time.

There are a variety of steps that could improve prevention practice and benefit more children. At the State level in Illinois, our governor recently signed the Children's Mental Health of 2003, which makes mental health promotion integral to education. It requires the Illinois State Board of Education to incorporate social and educational development standards as part of the Illinois Learning Standards, and it requires every school district to develop a policy for incorporating social and emotional development into the district's plan.

The Illinois legislation can serve as a national model for innovative education that fosters social and emotional learning to enhance students' academic performance, health, character and citizenship. For school-based prevention to succeed, it is crucial that schools have prevention coordinators who are explicitly responsible for the selection, effective implementation, coordination, evaluation and continuous improvement of evidence-based programming.

We are finding that providing training and technical assistance to National Safe and Drug Free School coordinators improves practice and benefits children. This investment is starting to pay off and should be continued.

Finally, I applaud SAMHSA's leadership to translate rigorous science into effective practice. Recently, SAMHSA announced that it will provide $45 million to support States in implementing the new Strategic Prevention Framework to prevent substance abuse and promote mental health. The SAMHSA framework will facilitate collaboration among different prevention programs across schools, families and communities.

This promising prevention initiative requires new and substantial funds if we are to reduce significantly the number of young people who develop substance abuse and mental health problems.

In closing, I also thank the Committee and Senator DeWine even asked today about the importance of encouraging stronger interagency linkages between Federal agencies such as the U.S. Department of Education, Health and Justice. Such collaboration is critical both to improve coordinated prevention through practice through research and to understand factors that influence high quality dissemination and utilization of prevention programs and policies.

Once again, thank you, Mr. Chairman, for the opportunity to present this testimony and for holding this timely hearing. I would be glad to answer any questions the Subcommittee may have for me.

[The prepared statement of Mr. Weissberg follows:]

PREPARED STATEMENT OF ROGER P. WEISSBERG, PH.D.

Good morning, Chairman DeWine, Senator Kennedy, and Members of the Subcommittee. Thank you for inviting me here today to comment from my 30-year perspective as a psychologist, prevention researcher, and practitioner addressing the challenges facing school and other community-based prevention programs as they work to prevent youth substance abuse.

I am Roger Weissberg, Professor of Psychology and Education at the University of Illinois at Chicago, where I direct a Prevention Research Training Program in Urban Children's Mental Health and AIDS Prevention funded by the National Institute of Mental Health. I also serve as President of the Collaborative for Academic, Social, and Emotional Learning (CASEL), an organization dedicated to the development of children's social-emotional competencies and the capacity of schools, parents, and communities to support that development. CASEL's mission is to establish integrated, evidence-based social and emotional learning (SEL) as an essential part of preschool through high school education (for information on advances research and practice in this area see www.CASEL.org).

Recently, I co-edited a Special Issue of the *American Psychologist* on "Prevention that Works for Children and Youth" (Weissberg & Kumpfer, 2003). The articles in the Special Issue are an outgrowth of an American Psychological Association Presidential Task Force on "Prevention: Promoting Strength, Resilience, and Health in Young People" that I co-chaired. The task force members concluded that prevention research has matured substantially in recent decades, synthesizing new knowledge and offering important findings to guide prevention practice and policy. Part of my testimony will highlight some common features of effective prevention programming identified by scholars representing diverse perspectives. I am pleased to emphasize that there is great overlap between our views and the principles emphasized in the new Strategic Prevention Framework to advance community-based programs for substance abuse prevention and mental health promotion announced by the Substance Abuse and Mental Health Services Administration (SAMHSA).

In Part I of this testimony, I briefly introduce findings about trends in adolescent substance use and other risky behaviors and comment on the implications of these findings for coordinated prevention and youth-development programming. In Part II, I review results from recent large-scale studies and reviews on effective school-based prevention programs. Part III presents some of the challenges and difficulties that schools face in administering school-based prevention programs. In Part IV, I share with you some of the work CASEL is doing to reduce the gap between research and practice. In the last part, I comment on SAMHSA's "Strategic Prevention Framework" as a powerful tool towards collaboration and coordination among multiple prevention programs.

I. Trends in Adolescent Substance Use and Other Risky Health Behaviors

The news regarding recent national trends in adolescent substance use is mixed. Perhaps the simplest set of headlines is "During the past 12 years, tobacco and alcohol use has declined; marijuana, cocaine, and illegal steroid use has increased; and, overall, too many students engage in all forms of substance use." To support this summary, I highlight some findings recently reported by the Centers for Disease Control and Prevention (CDC) from the 2003 Youth Risk Behavior Surveillance System (www.cdc.gov/yrbss). The National Youth Risk Behavior Survey is conducted every 2 years during the spring semester and provides data gathered from students in grades 9–12 in public and private schools throughout the United States. The chart below summarizes changes in percentages of self-reported substance use between 1991 and 2003.

Behavior	1991	2003
Lifetime cigarette use	70.1	58.4
Current cigarette use (last 30 days)	27.5	21.9
Lifetime alcohol use	81.6	74.9
Current alcohol use (last 30 days)	50.8	44.9
Episodic heavy drinking (last 30 days)	31.3	28.3
Lifetime marijuana use	31.3	40.2
Lifetime cocaine use	5.9	8.7
Lifetime illegal steroid use	2.7	6.1

Defying some commonly held stereotypes, substance use crosses geographic and economic boundaries. For example, studies comparing substance use between adolescents from affluent suburban versus low-income urban families show that high rates of teens from affluent families use substances (Luthar & Becker, 2002; Levine & Coupey, 2003). Such findings speak to the importance of universal (i.e., targeting all children) rather than selective approaches to prevention. Targeting only selective groups of children and youth in our prevention efforts may result in ignoring substantial numbers of children and youth who are in urgent need of prevention programs. Some may argue that broadly targeted prevention programming may not be appropriate for at-risk groups. However, research findings suggest that as long as we provide programs with fidelity, that is, implement them in a way that is faithful to the original program design, most programs are equally beneficial for all students (Griffin, Botvin, Nichols, & Doyle, 2002). Furthermore, Caulkins and his colleagues (2002) recently examined whether the benefits of a model school-based prevention program exceed its costs. According to their best estimates, they concluded that society would currently realize quantifiable benefits of $840 from a student's participation compared with a program cost of $150 per participating student, a saving of almost $6 for every $1 invested.

It may sound as though I am making an argument that early and effective substance abuse prevention for young people should be our highest priority. But, actually, I will argue that a broader perspective is needed. Preventing substance abuse is a worthy endeavor, but it is a limited goal. It is indisputable that young people who are not drug abusers may still lack the resources to become healthy adults, caring family members, responsible neighbors, productive workers, and contributing citizens (Pittman, Irby, Tolman, Yohalem, & Ferber, 2001). In addition to having drug-free sons and daughters, parents across the United States want children who:

1. are intellectually reflective and committed to lifelong learning;
2. interact with others in socially skilled and respectful ways;
3. practice positive, safe, and healthy behaviors;
4. contribute ethically and responsibly to their peer group, family, school, and community; and
5. possess basic competencies, work habits, and values as a foundation for meaningful employment and engaged citizenship.

Although the prevalence of substance use calls for action, there is also reason for concern about high rates of related adolescent risk behaviors in domains such as violence, sexual behavior, depression, and suicide. Consider the following percentages of student involvement in problem behaviors from the 2003 CDC Youth Risk Behavior Surveillance System:

Behavior	2003
Threatened or injured with a weapon on school property (last 12 months)	9.2
Engaged in a physical fight on school property (last 12 months)	12.8
Currently sexually active partners (lifetime)	34.3
Had 4 or more sex partners (lifetime)	14.4
Felt so hopeless almost every day 2 weeks or more in a row that they stopped doing some usual activities (last 12 months)	28.6
Made a suicide plan (last 12 months)	16.5
Attempted suicide (last 12 months)	8.5

When we look at the broader picture of adolescent functioning, it is clear that, beyond substance use, significant percentages of young people experience mental health problems, engage in other risky behaviors, and lack social-emotional competencies. The 1999 Surgeon General's report on mental health indicated that 20 percent of children and adolescents experience the symptoms of a mental disorder during the course of a year, and that 75–80 percent of these children do not receive appropriate services (U.S. Department of Health and Human Services, 1999). Dryfoos (1997) estimated that 30 percent of 14 to 17 year-olds engage in multiple high-risk behaviors, and that another 35 percent, considered to be at medium risk, are involved with one or two problem behaviors. Approximately 35 percent have little or no involvement with problem behaviors, but even these young people require strong and consistent support to avoid becoming involved.

Such a constellation of multiple high-risk behaviors points to the importance of moving beyond the problem-focused approach and especially beyond targeting only one problem behavior at a time. Ripple and Zigler (2003) argued that such approaches fail to take into consideration the complicated etiology of individual target problems and the significant overlap of multiple problems. The design of prevention programs should be guided by the theoretical knowledge on risk and protective factors commonly underlying multiple problem behaviors. Furthermore, programs should not merely aim at reducing risk conditions; they also should explicitly promote personal and environmental assets that will decrease problem behaviors and, more important, serve as foundations for healthy development (Greenberg et al., 2003; Kumpfer & Alvarado, 2003; Wandersman & Florin, 2003).

In assessing the functioning of young people and families, I draw three major conclusions that have relevance for prevention policy and practice. First, a significant proportion of children will fail to grow into contributing, successful adults unless there are major changes in the ways they are taught and nurtured. Second, families and schools must work together more systematically and effectively to enhance the social-emotional competence, character, health, and academic learning of all children. Finally, new kinds of community resources and arrangements are needed to support the positive development of young people into responsible, healthy, productive workers and citizens.

II. Principles of Effectiveness Based on Meta-Analyses and Large-Scale Reviews of Prevention Programs

The No Child Left Behind Act has prompted heightened awareness of educational accountability as well as the need for evidence-based programs to improve student performance. Federal and State government agencies are mandating that only programs proven to be effective should receive public funds. Due to significant advances in prevention science, there have been increasing efforts to identify effective prevention programs and the characteristics that underlie such programs (Nation et al., 2003).

A number of institutions, both public and private, including the Centers for Disease Control and Prevention, the Center for Substance Abuse Prevention, the Office of Juvenile Justice and Delinquency Prevention, the U.S. Department of Education, and CASEL have put forth lists of model programs. However, there have been growing concerns about the gap between scientific knowledge about prevention programs and actual practice (Wandersman & Florin, 2003). Therefore, with the intention to inform practitioners about the availability and characteristics of effective programs, several researchers have conducted reviews and meta-analyses of prevention programs. These studies have yielded noteworthy principles of successful prevention programming (Catalano et al., 2002; Durlak, 1998; Eccles & Appleton, 2002; Greenberg, Domitrovich & Bumbarger, 2001; Kumpfer & Alvardo, 2003; Nation et al., 2003; Tobler, 2000; Wilson, Gottfredson, & Najaka, 2001).

In their meta-analysis of 207 universal prevention programs published between 1978 and 1998, Tobler et al. (2000) found that programs that only emphasized information and lacked an interactive approach were minimally effective. Among three types of programs categorized under interactive approaches—interpersonal skills training programs, comprehensive life skills training programs, and school-wide restructuring programs—system-wide restructuring showed the strongest impact. As researchers have consistently pointed out, thoughtful school-based prevention and youth development interventions should enhance students' personal and social assets and at the same time improve the quality of the environments in which students are educated (Catalano et al., 2002; Eccles & Appleton, 2002; Greenberg et al., 2003). Given that peer social influences are the most salient determinant of substance use, no one will doubt the crucial role that refusal skills (the ability to "say no" and mean it) play in preventing teens from using tobacco, alcohol, and other substances. However, skills training alone is not sufficient. Considering that many youth involved in substance use lack a sense of connectedness to school and family, instruction of skills and knowledge should take place in tandem with changes in school-wide culture that help children feel more engaged, safe, and supported.

Weissberg, Kumpfer, and Seligman (2003) highlighted six characteristics of effective prevention programming across school, family, and community levels for young people:

1. Uses a research-based risk and protective factor framework that involves families, peers, schools, and communities as partners in coordinated programming that targets multiple outcomes;
2. Is long-term, age-specific, and culturally appropriate;
3. Fosters development of individuals who are healthy and fully engaged by teaching them to apply social-emotional skills and ethical values in daily life;
4. Aims to establish policies, institutional practices, and environmental supports that nurture optimal development;
5. Selects, trains, and supports interpersonally skilled staff to implement programming effectively; and
6. Incorporates and adapts evidence-based programming to meet local community needs through strategic planning, ongoing evaluation, and continuous improvement.

Despite advances in scientific knowledge about ways to make prevention programs effective, there still is a wide gap between research and practice—what we know and what we do. In the case of school-based prevention programs, many schools still do not use programs of proven effectiveness (Gottfredson & Gottfredson, 2001). Even when schools select research-based programs, the majority of them report that they do not implement those programs with fidelity. Bolstering the quality of schools so that they work effectively with families to foster both the social-emotional development and academic performance of all students must be the top priority of any comprehensive prevention strategy for young people (Osher, Dwyer, & Jackson, 2002).

III. Barriers to Successful Implementation of School-Based Prevention Programs

Several observations can help to explain the disparity between research and practice. Taken together, they represent a set of barriers to the successful implementation of beneficial school-based prevention programs.

First, there is widespread fragmentation and lack of coordination among prevention programs. In most cases, schools are flooded with programs covering such topics as character education, substance abuse prevention, and HIV/AIDS awareness, with no effort to coordinate what are in fact closely interrelated realms. No matter how many prevention programs schools have, those programs are not likely to achieve their intended effects as long as they are introduced in a piece-meal and uncoordinated manner.

A second challenge is the lack of administrator-teacher support and professional development opportunities. Bombarding principals and teachers who are already overburdened by academic duties with a succession of new programs with minimum support and guidance is likely to raise educators' resistance and ultimately result in ineffective program results. As seen in the work of Osher et al. (2002) and Adelman and Taylor (2000), for a prevention program to achieve maximum impact, the entire school community should embrace the program's mission and goals, thereby changing whole school culture. However, without the ownership of the school community, active leadership of administrators, and high-quality implementation by teachers and student-support staff, the program is not likely to be successful.

A third challenge is the lack of an accountability system. I have already noted that the majority of the programs are not implemented with fidelity. The problem is exacerbated by the absence of accountability systems through which both the implementation and the impact of a prevention program is assessed and shared publicly in an ongoing fashion. Therefore, to achieve faithful and successful implementation of prevention programs, we should adopt accountability systems for children's social-emotional development and health with the same vigor as we do for their academic performance.

IV. The Social and Emotional Learning Framework: Bridging the Gap Between Science and Practice

In 1994 a group of educators, school-based prevention researchers, and child advocates came together to address the ineffective nature of so many prevention and health promotion efforts. The result was the formation of the Collaborative for Academic, Social, and Emotional Learning (CASEL) Since its inception, CASEL has been working toward the goal of establishing social and emotional learning (SEL) as an essential element of education from preschool through high school. SEL is the process of acquiring the skills to recognize and manage emotions, demonstrate caring and concern for others, make responsible decisions, establish positive relationships, and handle challenging situations effectively. SEL is fundamental to children's social and emotional development, health and mental well-being, ethical development, citizenship, motivation to achieve, and academic learning.

Developmentally and cultury appropriate SEL-focused classroom instruction in the context of a safe, caring, well-managed, and participatory school environment enables young people to learn, practice, and apply SEL skills. It also enhances students' connection to school through caring, engaging classroom and school practices. Learning social and emotional skills is similar to learning other academic skills in that the effect of initial learning is enhanced over time to address the increasingly complex situations children face. SEL outcomes are best accomplished through effective classroom instruction; student engagement in positive activities in and out of the classroom; and broad student, parent, and community involvement in program planning, implementation, and evaluation. Ideally, planned, systematic SEL instruction should begin in preschool and continue through high school. We at CASEL believe that the rationale for SEL can serve as a powerful framework to facilitate coordination and integration of multiple fragmented prevention efforts (Greenberg et al., 2003) and thus address more effectively some of the most pressing problems facing prevention and health promotion programs today.

There is growing evidence that school-based SEL programming can successfully enhance students' academic performance as well as reduce substance use and address other problem behaviors (Greenberg et al., 2003; Zins, Weissberg, Wang, & Walberg, 2004). In spite of the fact that most schools' mission statements embrace the notion of the whole child, most schools do not make systematic efforts to institutionalize promotion of social and emotional competencies and creation of environments supporting their development.

CASEL believes that schools should explicitly address children's social and emotional development as an educational priority. We are conducting a variety of activities to help educators and prevention professionals create and sustain more effective approaches to prevention programming. These activities include:

- Disseminating scientific knowledge about the conceptual framework for SEL and evidence-based SEL programs through CASEL's publications, web site, and monthly electronic newsletters;
- Providing support and technical assistance for the pre-service and in-service training of teachers and administrators to ensure fidelity and sustainability of school-based SEL prevention programs;
- Promoting school-family-community partnerships; and

- Developing and facilitating local, State, and national networks of educational leaders who are concerned about effective prevention and positive youth development programming

At the State level in Illinois, our Governor recently signed the Children's Mental Health Act of 2003 (Public Act 93-0495). Section 15 (Mental Health and School) requires the following:

1. The Illinois State Board of Education shall develop and implement a plan to incorporate social and emotional development standards as part of the Illinois Learning Standards for the purpose of enhancing and measuring children's school readiness and ability to achieve academic success.
2. Every Illinois school district shall develop a policy for incorporating social and emotional development into the district's educational program. The policy shall address teaching and assessing social and emotional skills and protocols for responding to children with social, emotional, or mental health problems, or a combination of such problems, that impact learning ability.

CASEL is currently working with the Illinois State Board of Education and the Illinois Children's Mental Health Partnership to implement this legislation. The Illinois effort can serve as a national model for fostering educational systems that focus on student competencies that serve as foundations for successful academic performance, health, character, and citizenship.

At the national level, CASEL trains school building-level and school district-wide coordinators who support the implementation, evaluation, and continuous improvement of evidence-based school safety and substance use prevention programs. Specifically, we, as a team with three other groups (the American Institutes for Research, the Education Development Center, and the National Association of School Psychologists) provide training and technical assistance to the National and Middle School Prevention Coordinators under the Office of Safe and Drug-Free Schools in the U.S. Department of Education. The coordinators play a critically important role in their schools and districts by ensuring successful implementation of evidence-based programs. Their roles include: (1) integrating and coordinating multiple programs, (2) conducting needs assessments and establishing baseline data related to prevention and youth-development programming, (3) conducting implementation and outcome assessments, and (4) overseeing and facilitating prevention-related school staff development.

We applaud the Office of Safe and Drug-Free Schools for its effective leadership in conceptualizing and advancing efforts to train and support Safe and Drug-Free School Coordinators. Given the crucial role that they play in successful implementation of programs and the host of tasks for which the coordinators are responsible, more funding should be provided for training the coordinators and selecting and hiring more individuals to join in this important endeavor. For school-based prevention to succeed, it is crucial that districts and schools have staff members who are explicitly responsible for assuring the selection, effective implementation, coordination, evaluation, and continuous improvement of evidence-based programming.

Another important avenue for informing and supporting educators to implement research-based SEL programming is through the Regional Education Laboratories. CASEL is effectively collaborating with the Mid-Altlantic Regional Educational Laboratory for Student Success at Temple University to disseminate information and provide supports to thousands of educators who implement school-family prevention programming (CASEL, 2003; Zins et al., 2004).

V. Toward Further Collaboration and Coordination: The SAMHSA Strategic Prevention Framework

In recent years, SAMHSA has provided groundbreaking and high-quality national leadership in translating rigorous science into effective practice. For example, through its Model Programs initiative, Training and Technical Assistance Centers, and informative publications, SAMHSA has focused on making sure that the highest quality, evidence-based programs are provided effectively and broadly to American children and families. Given the common risk and protective factors for substance abuse and mental health problems, it is good to see increased coordination between CSAP and CMHS so that their science-based interventions focus simultaneously on the fundamental and common factors that influence both types of outcomes. The best payoff from these efforts will come from programming that begins in early and middle childhood and works with schools, families, and communities to create integrated systems of prevention and treatment in which prevention is seen as the front line of defense to reduce the number of new cases as well as an important offensive strategy to enhance the competence of all young people.

SAMHSA has recently announced that it will provide $45 million to support States in implementing the new "Strategic Prevention Framework (SPF)" to prevent substance abuse and promote mental health. The Framework is based on the belief that effective prevention programs must (1) involve individuals, families, and entire communities, (2) acknowledge the importance of health promotion as well as problem prevention, (3) emphasize common risk and protective factors among multiple problems, and (4) have accountability systems through which program implementation and impact are monitored in an ongoing fashion.

The SPF recognizes the lack of collaboration and coordination among multiple prevention efforts and the absence in too many cases of a comprehensive theoretical framework. I applaud SAMHSA for creating this comprehensive framework. It has tremendous potential to, in SAMHSA's own words, "bring together multiple funding streams from multiple sources to create the true cross-program and cross-system approach that health promotion and disease prevention demand."

The newly proposed SAMHSA Framework will facilitate collaboration among different prevention programs in multiple settings that include schools, families, and communities, a crucial component for effective prevention strategies. SAMHSA's strategic planning represents an exciting set of directions, but their prevention initiatives require new and substantial funds if we are to reduce significantly the number of young people who develop substance abuse and mental health problems. I urge you to provide more funding for SAMHSA's prevention efforts. In addition, I hope that you will encourage stronger interagency linkages between Federal agencies—such as the U. S. Department of Education, SAMHSHA, and the National Institutes of Health—both to improve practice and to understand factors that influence high quality dissemination and utilization of effective prevention programs and policies.

Once again, thank you, Mr. Chairman and Senator Kennedy for the opportunity to present this testimony and for holding this timely hearing. I would be glad to answer any questions the subcommittee may have.

Senator DEWINE. Good. Doctor, thank you very much.

Ms. Ramsey-Molina?

Ms. RAMSEY-MOLINA. Good morning, Chairman DeWine, Senator Reed.

As president of the Coalition for a Drug Free Greater Cincinnati, it is truly my pleasure to be here today. Thank you for the opportunity to speak.

The Coalition was founded in 1996 by Congressman Rob Portman as a long-term effort to mobilize all sectors of the community to address the issue of adolescent substance abuse. He understood that to be successful, we must convene the community at large to deal with each child as an individual while changing the community norms, attitudes and standards of conduct.

I want to, before I start my testimony, I want to share a story about why I do what I do. Many years ago, several years ago, I was providing direct service to the Coalition through the Alcoholism Council of Cincinnati, and I worked with children of single, crack-addicted mothers within the city. I had a group of young girls, and one of the girls said to me, when I grow up, I am not going to do drugs. And I said that is great. She said let me tell you what I am going to do: when I grow up, I am going to have a baby, and then, I am going to get married, and my boyfriend is going to sell drugs so we can be rich.

And I took a step back, and I said my goodness, we have an issue here. And I said, well, it is against the law to sell drugs. What happens to men who sell drugs and women who sell drugs? And she said, well, they go to jail for 30 or 90 days. When they get out, we have a party.

And so, I took another step back and said, well, if that is what your boyfriend is going to do to be rich, what do you want to do? Well, she had recently lost her grandfather, who was her only consistent male influence, positive male influence in her life to heart disease. She wanted to grow up and be a cardiologist. She wanted to work on people with sick hearts.

I did not last in direct service much longer after that. I moved into community coalition building, because I realized that one single program intervening with that small child for 50 minutes over the course of 10 weeks was not going to get us where we needed to be. We needed to convene the community at large. The individual programs are extremely important, but we had to intervene with the systems and the messages she was receiving throughout the community the other 23 hours of the day.

We must address the community at large. Coalitions do this. We must look at community norms, attitudes and behavior. Coalitions are uniquely positioned to engage all sectors and to create community change that supports all youth, including this young little girl.

Coalitions develop a broad base of support and collaboration. They promote shared resources so that together, we can achieve more. Linda Verst, a volunteer in Northern Kentucky, in the rural parts of Northern Kentucky, they were having challenges meeting the adolescent treatment needs; had limited resources, many youth were going untreated. She convened roundtables as a member of the Coalition for a Drug Free Greater Cincinnati to look at what are our resources, local, State and national, and how do we work together?

After the course of 18 months' studying and looking at the issues, the result is increased access and utilization of adolescent treatment spots in Northern Kentucky. Collaboration works through coalitions. Coalitions implement data-driven processes that ensure that our limited resources have maximum impact, making sure that we understand the data, and we understand the issue, so that we can focus what it is that we are doing.

Coalitions apply the science of prevention and treatment through all sectors of the community. Coalitions work within communities, with community members, take the science and implement through the fabric, through the culture of the individual community. Coalitions engage multiple individuals across the community to decrease drug use by increasing protective factors and decreasing risk factors for individual youth. Coalitions do work.

Our comprehensive efforts through the Coalition for a Drug Free Greater Cincinnati has allowed us the opportunity to surround the issue and to provide a single message, a single, unified community that says to kids, it is not okay, it is not healthy; we can make better choices. The result? Fewer kids in Greater Cincinnati are using. Southwest Ohio boasts lower use rates among adolescents than the State and the national averages.

Why and how does it work? Tammy Sullivan, a single parent from Greater Cincinnati, chaired our parent school-youth task force and implemented the Strong Voices, Smart Choices campaign, which put parenting for prevention tips into the hands of over 750,000 parents in Greater Cincinnati. This contributed to a 54 percent reduction in use among adolescents whose parents talked to them about the issue and set and enforced clear and consistent rules.

Rob Matucci, working in global hair care for Procter and Gamble, oversees the implementation of the local anti-drug media campaign for the Cincinnati market. As a volunteer, he facilitates over $1 million worth of donated air time. The result? A 19 percent decrease in adolescent use among youth who see or hear anti-drug commercials. Mike Hall, the principal at a local suburban high school, implements the Coaches, Kids and Chemicals clinic. The result, a 42 percent decrease in use among adolescents who are active in schools that have athletic programs that implement substance abuse prevention.

Pastor Wilkins, from the Faith Community Alliance, implements the Reviving the Human Spirit project. The result? A 50 percent decrease in use among kids who are actively involved in prevention programs through their church. I could provide many examples of individuals from throughout Greater Cincinnati who have dedicated their time and talent to the table of coalition building and shared that with our resources.

Since our inception in 1996, we have grown to include 31 neighborhoods and coalitions in communities throughout Greater Cincinnati. We see greater decreases in use, adolescent drug use, in these communities than similar communities that do not have coalitions.

I am a firm believer in the power of communities to come together as a coalition and decrease adolescent substance abuse. I do it; I work it; and I have seen it. It works.

Thank you for the opportunity to speak today.

[The prepared statement of Ms. Ramsey-Molina follows:]

PREPARED STATEMENT OF RHONDA RAMSEY-MOLINA

Good Morning Chairman DeWine and other distinguished Members of the Subcommittee. My name is Rhonda Ramsey Molina and I serve as the President of the Coalition for a Drug Free Greater Cincinnati.

The Coalition for a Drug Free Greater Cincinnati was founded in 1996 by Congressman Rob Portman as an effort to mobilize all sectors of the community to address adolescent substance abuse and the effects on neighborhoods throughout Greater Cincinnati. Our mission—promoting drug free environments for youth and mobilizing and supporting local anti-drug coalitions is served through implementation of multiple strategies through multiple sectors aimed at changing community norms, attitudes and standards of conduct. Hailed as a national model for coalitions with its innovative approach to adolescent substance abuse, the Coalition has grown dramatically since its inception to include 31 local coalitions in neighborhoods throughout Greater Cincinnati.

I begin my testimony by sharing a brief story of why I am committed to coalitions as an integral part of adolescent substance abuse prevention and treatment.

Several years ago, prior to joining the coalition field, I provided direct services to children of chemically dependent parents within the city of Cincinnati. One day with a group of five 4th grade little girls who were all daughters of single, crack addicted mothers, I realized the importance of coalitions. One of the girls in the group stated, “When I grow up I am not going to use drugs.” She said, “When I grow up I am going to have a baby, then get married and my boyfriend is going to sell drugs so I can be-rich.”Astonished by her thought pattern, I took a deep breath and step back and shared with her that it is against the law to sell drugs. I asked her what happens to people who sell drugs. She stated, “They go to jail for 30 or 90 days then they get out and you have a party.” Again, astonished by her thought process, I said that that may be what your boyfriend does to make money, but what do you want to do. Come to find out, she wanted to be a heart surgeon. Recently, her grandfather, the only constant, positive male influence in her life, had died of a heart attack and she wanted to help people like her grandfather who had sick hearts.

The reality is that any program, provided only once a week for 50 minutes over a 10-week period, while valuable, is not able to address the larger community issues that adolescents face the other 23 hours a day they are not participating in the program. Direct service programs focus on individuals, not the community at large. The messages adolescents receive in their community are not necessarily the same messages they receive in the program.

- **Coalitions address the community at large.** In an effort to support every child and enhance the effectiveness of individual programs, coalitions build a community consensus of non-use so that youth receive a consistent message regardless of what system they interact with in the community.
- **Coalitions develop a broad base of support and collaboration. They convene the energy and resources of multiple sectors to enhance the effectiveness of individual approaches.**
- Congressman Rob Portman initiated the Coalition in Cincinnati because he realized that he could not simply legislate away the drug problem from Washington. He needed to partner with the community at large so that together we could attack the issue from all sides. We could collaboratively legislate, educate, recreate, arrest, intervene, treat, etc.
- We mobilize more talents, resources and approaches to influence an issue than any single organization could achieve alone.
- **Coalitions implement data driven planning processes to define the issue within their community and then program accordingly.**
- In 1996 the Coalition For a Drug Free Greater Cincinnati implemented the Student Drug Use Survey in an effort to provide the region the most current and reliable source of validated information on youth substance abuse. In 2004, this survey gathered drug use data from nearly 70,000 7th through 12th grade students in Greater Cincinnati.
- Data from this survey and other surveys were used to identify key risk and protective factors present in Greater Cincinnati and to develop a comprehensive community plan to address the issues using strategies that enhance protective factors and reduce risk factors.
- The community plan is implemented through partnerships and collaboratives with the many partners who make up the coalition.
- Example—Linda Verst, a prevention specialist, partnered with the Coalition to sponsor community roundtables to assess community needs regarding adolescent substance abuse treatment. In a large, rural geographic area of Northern Kentucky, treatment services were scarce and needs were going unmet. The roundtables promoted the spirit of collaboration among providers who in turn shared resources and planned cooperatively. This resulted in increased access to adolescent substance abuse treatment throughout Northern Kentucky.
- **Given their collaborative approach, coalitions are uniquely positioned to plan and implement a diverse set of strategies to change community norms, attitudes and standards of conduct.**
- Example—Tamie Sullivan, a parent in the community, chaired our Parent Task Force and facilitated the implementation of the “Strong Voices, Smart Choices” parent education campaign. This campaign partnered with businesses, doctors, pharmacies, the local media, and the Ohio National Guard to put parenting tips into the hands of over 750,000 parents in Greater Cincinnati. The campaign changed community attitudes and norms. Middle school parents often pull away from the issue at this critical time, this campaign under Tamie’s leadership, changed the standard so that the expectation is that parents become increasingly involved during the middle school years. The result, a 57 percent decrease in drug and alcohol use among youth who report that parents talk to them and set clear rules regarding substance abuse.
- **The coalition focuses on increasing protective factors and decreasing risk factors. And we are moving the needle.**
- Examples of measurable impact (see attached table)
- Rob Matteucci, a Vice President at Procter & Gamble volunteers to oversee the implementation of the anti-drug media campaign in our market. The result, a 12 percent decrease in drug use among youth who have seen or heard anti-drug advertisements.
- Mike Hall, Principal at a local high school, partners with businesses, a local hospital and professional athletes in Greater Cincinnati to implement the “Coaches, Kids and Chemicals” program. Over 1,200 coaches, principals and athletic directors have been trained to incorporate substance abuse prevention into their athletic programs. The result, a 34 percent decrease in drug and alcohol use among youth involved in school sports.
- Pastor Wilkins, Chair of the Faith Community Alliance, partners with local service providers and other faith leaders to implement the “Reviving the Human Spirit”, a faith-based initiative aimed at increasing the effectiveness of faith based programs in our region. The result, a 55 percent reduction in drug and alcohol use among youth involved in these programs.

- Marty Herf , with the Ohio Bureau of Workers Compensation worked with the Drug Free Workplace Task Force to convene local businesses, EAP (Employee Assistance Program) providers and State representatives to implement the "Say Yes To A Drug Free Workplace" program. This program initiated the creation of a statewide incentive for businesses who implement a qualified drug free workplace program. The result, southwest Ohio has the highest percentage of drug free workplaces in the State.

By working through multiple systems within the community to address adolescent substance use and abuse the Coalition for a Drug Free Greater Cincinnati has positively impacted the issue. All of the strategies that have been implemented to enhance protective factors, that the Coalition has organized the community around, have become increasingly more effective for the last 6 years. And, for the first time in over a decade, drug use is declining in Greater Cincinnati. In fact, for the first time since the 80's, data indicate that less than 20 percent of the combined 7th through 12th population are 30-day users of alcohol, tobacco and marijuana.

I am a firm believer in the power of communities to reduce the use and abuse of illicit drugs and alcohol among adolescents. Communities that attack their drug problems in a comprehensive way, involve as many individuals, groups and institutions as possible have the greatest likelihood of success. With such strong coalitions working to convene the community to work collaboratively, Southwest Ohio boasts adolescent use rates that are significantly lower than State and national averages, which are also declining. Additionally, we see much greater reductions, by as much as 41 percent, in adolescent drug and alcohol use in communities where strong coalitions exist than in control communities where there are no coalitions.

REDUCTION IN MONTHLY USAGE OF CIGARETTES, BEER AND MARIJUANA SEVENTH THROUGH TWELFTH GRADE COMBINED

	2000	2004	% Reduction
Tobacco	21	15	29%
Marijuana	15	13	13%
Alcohol	30	19	37%

*Self-reported by Students in Grades 7-12 in CDFGC/Pride Survey

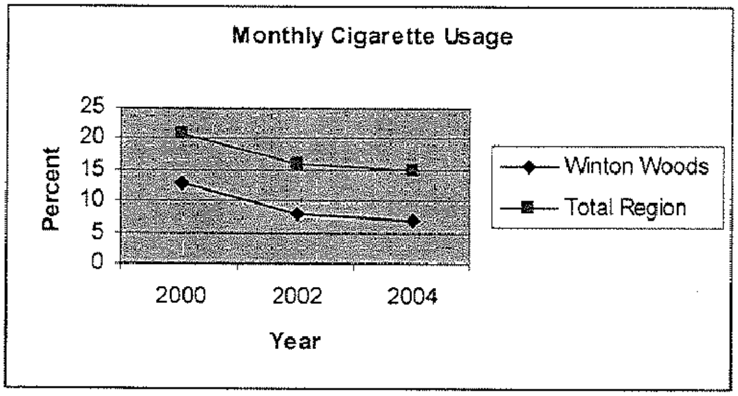
REDUCTION IN MONTHLY USAGE OF CIGARETTES, BEER AND MARIJUANA AS A FUNCTION OF KEY PROTECTIVE FACTORS

PROTECTIVE FACTOR*	AVERAGE REDUCTION IN USAGE**
Attending Church or Synagogue	55%
Participating in Sports	34%
Viewing Anti-Drug Commercials	12%
Parents Talking and Setting Rules	57%

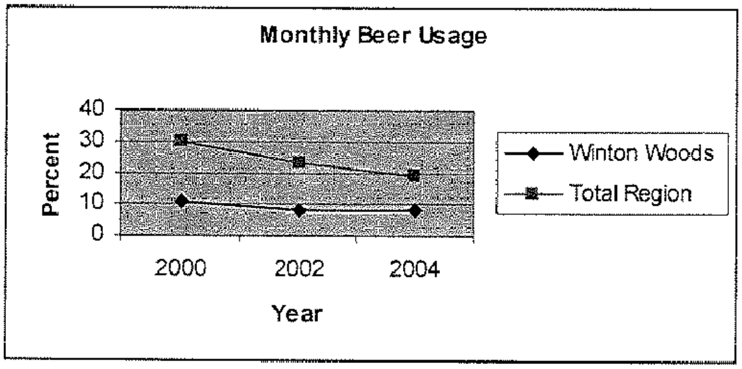
*Self-reported by Students in Grades 7-12 in CDFGC/Pride Survey

** Average reduction for Cigarettes, Beer and Marijuana Monthly Usage. Reduction is the percent change in monthly usage among those who participated in protective factor "A Lot" or "Often" as compared to "Rarely" or "Never".

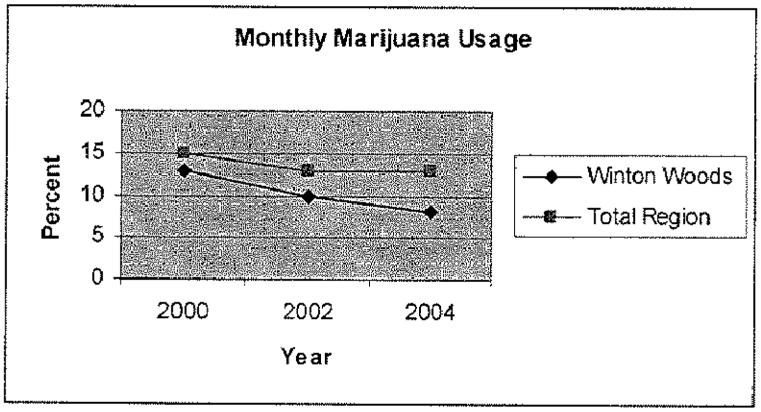
First Slide of Cigarette Usage



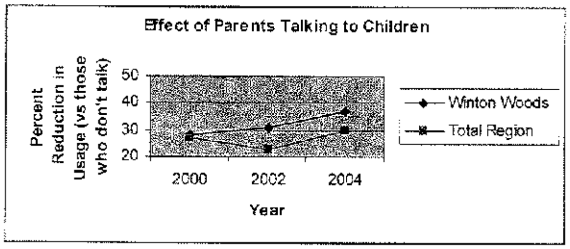
Second Graph of Beer Usage



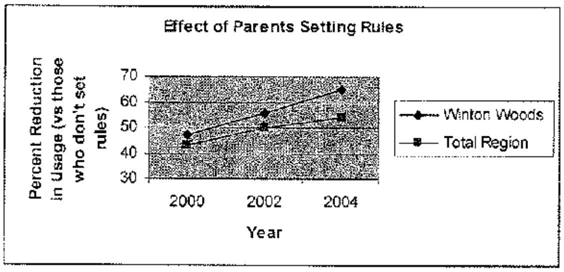
Third Graph of Marijuana Usage



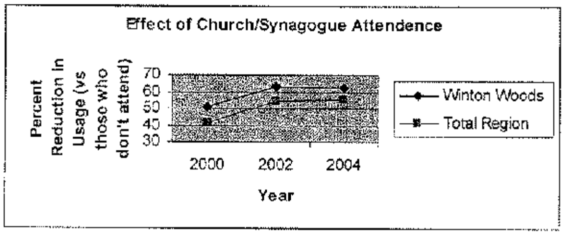
Fourth Graph of Effectiveness Factor – Parents Talking (Effect on all three Drugs combined)



Fifth Graph of Effectiveness Factor – Parents Setting Rules (Effect on all three Drugs combined)



Sixth Graph of Effectiveness Factor – Attending Church/Synagogue (Effect on all three Drugs combined)



Senator DEWINE. Great. Thank you very much.

Mr. Anton?

Mr. ANTON. Chairman DeWine and Senator Reed, good morning. My name is Ronald Anton, and I am the director of Juvenile Justice and Community Programs for Day One in Cape Elizabeth, Maine.

First of all, I would like to recognize you, Mr. Chairman, for your leadership in assisting people across the country who have addiction problems. Thank you for the opportunity to offer testimony today on behalf of Day One, the Maine Association of Substance Abuse Programs and the State Association of Addiction Services, the national organization of State alcohol and drug abuse treatment and prevention provider associations, whose mission is to ensure the availability and accessibility of quality drug and alcohol treatment, prevention, education and related services.

Day One has been making a difference in the lives of youth for over 30 years. Our spectrum of care provides prevention, intervention, treatment and after-care services for youth and their families throughout Maine. Today, we are Maine's premier agency dealing with adolescent substance abuse. We use a variety of evidence-based prevention and treatment programs, and we are respected as a resource and authority in the field.

Maine is a frontier State with a population of approximately 1.2 million people, and geographically, it is the size of all of the rest of New England combined. Maine's publicly-supported substance abuse service system is complex and community-based, providing education, prevention, early intervention and treatment services.

Now, I could talk about many of those programs, but I really want to focus on one in particular today. Our most innovative approach to treatment has been through the creation of a systems approach to identifying adolescents with the potential for substance abuse and accessing and providing services for them. Our collaborations began in 1996. And then, thanks to the impetus provided by a SAMHSA CSAT Treatment Capacity Expansion Grant that Maine received in 1998, Day One worked to formally develop the Juvenile Treatment Network.

The Juvenile Treatment Network is a coordinated, State-wide initiative whose goal is to identify, screen and refer adolescents with substance abuse issues to State-approved treatment providers of their choice. The Juvenile Treatment Network works to increase access to substance abuse treatment services by providing a system to coordinate a last resort funding for these services while identifying and addressing barriers to adolescent substance abuse treatment services.

The Juvenile Treatment Network is a collaboration of the Office of Substance Abuse, substance abuse treatment providers, Maine juvenile drug treatment courts, the Maine judiciary, the Department of Corrections, schools, police, the Native American tribes, and other community agencies. Day One is contracted by the Office of Substance Abuse to staff and manage the network.

It is with thanks to Annie Peletier, the program manager of the network, who is here with me today, and to her staff, that this program has reached its high level of success and acceptance in Maine. Prior to the Juvenile Treatment Network, although many treatment providers existed, few provided any significant substance abuse treatment services to adolescents. Now, identification, screening, assessment and treatment services to adolescents and their families are available through more than 50 provider agencies at more than 80 locations across the State of Maine.

The Juvenile Automated Substance Abuse Evaluation Screening and Referral Process, which was implemented in January 1998 as part of the Juvenile Treatment Network: results to date include close to 10,000 adolescents have been identified in the State of Maine as being at risk for developing a substance abuse problem, and more than 10,000 screenings have been conducted.

Of these, about 57 percent of the screenings recommended a further substance abuse evaluation to determine to what extent services were needed. Through this process, Maine reaches 18 percent of kids in need of treatment, exceeding the national average of 8 percent by more than double. Between 1996 and 2003, adolescent admissions to Maine's substance abuse treatment services increased by 137.5 percent, compared to only 21.7 percent for adults.

Now, the benefits of this voucher program model that we have has demonstrated the following: it provides a structure that has helped to increase access to substance abuse treatment services and recovery support services for adolescents. It provides client choice and informed selection of treatment providers through the State of Maine; provides an effective infrastructure through which to distribute last resort funds for substance abuse treatment services. It maintains the professional integrity of licensing and certification standards. It provides for performance accountability of treatment providers, and it offers funding for a limited range of recovery support services that can readily be expanded when appropriate.

Additionally, the network funds will cover transportation costs for adolescents to get them to and from treatment appointments as well as providing child care support. Day One continues to strive for quality and comprehensiveness in all of its prevention and treatment services. Equally as important, we work diligently to address barriers to treatment and systems issues that negatively affect the ability of Maine's youth and families to access these needed treatment and recovery support services.

We believe that our model, the only Statewide model in the Nation to build a system for adolescents that identifies youth in need of services, expands access to and improves treatment Statewide and engages all collaborative partners positively has produced positive results in a relatively short period of time. Surveys from our members support this direction and approach. We hope that the subcommittee will continue to study this model and encourage and support the expansion of adolescent prevention and treatment services nationwide.

Thank you for listening to this testimony today. I would be happy to answer any questions.

[The prepared statement of Mr. Anton follows:]

PREPARED STATEMENT OF RONALD ANTON

Introduction

Chairman DeWine and Members of the Subcommittee, thank you for the opportunity to present testimony on behalf of Day One, the Maine Association of Substance Abuse Programs, and the State Associations of Addiction Services, a national organization of State alcohol and drug abuse treatment and prevention provider associations whose mission is to ensure the availability and accessibility of quality drug and alcohol treatment, prevention, education, and related services. Day One has been making a difference in the lives of youth for over 30 years. Our spectrum of Care provides prevention, intervention, treatment and aftercare services for youth and their families throughout Maine. Today, we are Maine's premier agency dealing with adolescent substance abuse and we are respected as a resource and authority in the field. Our innovative programs and collaborative ethos provided adolescents, parents, schools and communities the training, treatment, and support needed to bring hope, healing and recovery to Maine youth and their families. Our mission is to dramatically reduce substance abuse among Maine youth to help them live productive, healthy, and rewarding lives.

Overview

We would like to present you with information about adolescent treatment in Maine and to share with you highlights of Day One's Juvenile Treatment Network, our “voucher system” for adolescent services. But first, here is some information about our State.

Maine is a frontier State with a population of approximately 1.2 million and geographically the size of all of the rest of New England combined. Maine has the largest county east of the Mississippi River (equal to the size of Connecticut and Rhode Island combined), and this county is in the most northern and rural part of the State. Maine’s Office of Substance Abuse (the State’s Single State Authority) has stated that it maintains a viable treatment continuum of services in the State that includes: shelters, extended shelters, detoxification, extended care, residential rehabilitation, halfway houses, non-residential rehabilitation, outpatient care, as well as facilities for treating adolescents. This range of services is designed to help clients receive the level of care they need.

Maine’s publicly supported substance abuse service system is complex and community based, providing education, prevention, early intervention, and treatment services. Currently, OSA has 45 contracts for services with 33 substance abuse treatment agencies. Our Juvenile Treatment Network has reached beyond these contracted treatment agencies in an attempt to reduce barriers, and provide access and choice to adolescent substance abuse treatment services.

In State Fiscal Year (SFY) 2003, 14,747 clients and 19,784 admissions were reported through OSA’s Treatment Data System. This was a 12.4 percent increase in clients served since the previous fiscal year. Of those clients admitted for services in State Fiscal Year 2003, 66.3 percent were males and 33.7 percent were females, continuing a similar pattern from past years. Eighty-five percent were adults and 15 percent were youth, continuing a growing pattern in serving youth.

Day One’s Adolescent Treatment is Research-Based

As an agency dedicated to providing services to adolescents and families affected by adolescent substance abuse, we constantly have been aware of the uniqueness of adolescents, and the special needs that they present. Adolescents are not just young adults. They present with varying and different issues than do adults, and need to have an ability to look at their specific risk and protective factors as they address their substance use and other life issues in treatment. Consequently, the challenges in providing services are to find and utilize effective prevention and treatment strategies. Day One supports the ongoing professional development of our staff in the various programs that we operate.

Treatment through Day One is available across the full continuum, from outpatient services and intensive outpatient, to long-term residential and transitional housing for youth in need. In the last 6 years, as more and more research has become available, we have (through both our Day One programming and through training sponsored or provided by our Juvenile Treatment Network) introduced and reinforced the use of evidence-based and other “best-practices” in prevention and treatment services to youth. We have worked collaboratively with the Office of Substance Abuse in all of these endeavors. In the prevention area, Day One currently provides a number of science-based and model prevention programs, including “Guiding Good Choices” and “Reconnecting Youth.”

In addition, in the assessment and treatment area, for the past number of years we have worked with Dr. Norman Hoffmann, on the faculty of Brown University, and an international expert on screening and assessment instruments, in the use of the “Practical Adolescent Dual Diagnosis Interview” (PADDI) as part of a co-occurring assessment in most of our Day One treatment services. Our studies of the results of the use of the PADDI have been published in a number of professional journals, including *Addiction Professional and Offender Substance Abuse Report.* Other publications are pending and our use of the PADDI continues. Also, our outpatient treatment services here at Day One are recent participants as a “Center of Excellence” in a private foundation grant award that will bring strong collaborations and additional skills development in the area of services to youth presenting with co-occurring substance abuse and mental health issues. This grant initiative will allow Day One the opportunity to work closely with Dr. Ken Minkoff, a psychiatrist and specialist in the development of service systems for people with both substance abuse and mental health issues. Day One will also participate as a founding member in the Maine Institute for Quality Behavioral Health Care.

Day One’s juvenile corrections programs utilize the evidence-based treatment modalities found to be most effective with adolescents in the juvenile justice system. Consequently our substance abuse treatment programs in the two State juvenile correctional facilities and in our Statewide Juvenile Drug Treatment Courts system make use of these approaches. Research conducted with our Juvenile Drug Treatment Courts demonstrate that adolescents in that program are less likely to return to the justice system with new offenses, and more likely to address their substance use and abuse issues in a positive manner than adolescents in the juvenile justice system that do not participate in this program.

Development of the Juvenile Treatment Network or "Voucher Program"

Our most innovative approach to treatment has been through the creation of a systems approach to accessing and providing services for youth. The initial collaborations that ultimately resulted in the formation of the Juvenile Treatment Network began in 1996 with the receipt of a small State grant. Then, thanks to the impetus provided by a CSAT Treatment Capacity Expansion Grant that Maine received in 1998, Day One worked to formally develop what is called the Juvenile Treatment Network. The Juvenile Treatment Network is a coordinated Statewide initiative whose goal is to identify, screen and refer adolescents with substance abuse issues to State approved treatment providers of their choice and to increase access to substance abuse treatment services by providing a system to coordinate a last resort funding for these services. The Network is a collaboration of the Office of Substance Abuse (OSA), substance abuse treatment providers, Maine Juvenile Drug Treatment Courts and Judiciary, the Department of Corrections, schools, police and other community agencies. Day One is contracted by the Office of Substance Abuse to staff and manage the Network.

Prior to the Juvenile Treatment Network substance abuse treatment services to adolescents in Maine were provided by only a handful of agencies across the State. Resources were scarce, and so our approach to treatment capacity expansion was to develop a system of services for adolescents that could be accessed across the State. Screening, assessment and treatment services are now available through more than 50 provider agencies at more than 80 locations across Maine.

The Juvenile Treatment Network utilizes the "Juvenile Automated Substance Abuse Evaluation" (JASAE), a standardized tool to screen adolescents and to provide information to determine if and to what extent further substance abuse assessment and treatment services are needed. These screening services are available throughout Maine and are conducted by a cadre of individuals who are trained by the Network to administer this screening instrument. If it is determined that further services are needed the adolescent is referred to one or more of over 50 participating treatment providers Statewide. In addition, the Network coordinates and distributes last resort payment funds for adolescents referred to Network member substance abuse treatment providers and who meet funding eligibility criteria.

The JASAE screening and referral process was implemented in January 1998 as part of the Juvenile Treatment Network. Results to date include:

- Close to 10,000 JASAE surveys have been administered which translates to just under 10,000 adolescents being identified in the State of Maine as being at risk for developing a substance abuse problem.
- Of those, about 57 percent of the screenings recommended a further substance abuse evaluation to determine to what extent services are needed. Through this process, Maine reaches **18 percent** of kids in need of treatment, **exceeding the national average of 8 percent by more than double.**
- Adolescents identified as needing treatment were given the choice to select one of the 50 participating treatment providers for services in over 80 locations throughout the State. Maine is the only State to have a Statewide coordinated system of care for adolescent substance abuse screening, assessment and treatment services.
- Through a combination of Federal Targeted Capacity Expansion Grant funds (SAMHSA/CSAT funds) and State funds, over $750,000 was distributed through the Juvenile Treatment Network to pay for screening and treatment services.
- Provided five treatment capacity expansion loans to treatment providers in 1999 as incentives to begin additional treatment services in underserved areas of the State.
- Provided five treatment capacity expansion start-up grants in 2002 for new and/or innovative substance abuse treatment programs totaling over $70,000.
- Additional data from the JASAE administrations is included at the end of this testimony.

The Juvenile Treatment Network has demonstrated success in implementing an effective centralized identification, screening, referral and last resort funding system to increase access to substance abuse treatment services for adolescents. This model is an effective "Voucher program" and shares common goals and objectives for implementation. In a January 2004 report, prepared by the Office of Substance Abuse, and presented to the Maine Legislature Joint Standing Committee on Health and Human Services regarding "An Act to Obtain Substance Abuse Services for Minors," it was stated that "Capacity to treat adolescent substance abuse has expanded dramatically over the past few years, particularly at the outpatient level because of the creation of the Juvenile Treatment Network."

The benefits that this "voucher program" model has demonstrated include:

- Providing a structure that has helped to increase access to substance abuse treatment services and recovery services for adolescents;
- Providing client choice and informed selection of treatment providers throughout the State of Maine;
- Providing an effective infrastructure through which to distribute last resort funds for substance abuse treatment services;
- Maintaining professional integrity of licensing and certification standards;
- Providing for performance accountability of treatment providers;
- Offering funding for a limited range of recovery support services that can readily be expanded when appropriate; and
- Providing assessment and treatment services at an average cost of $1,597 per adolescent admitted to treatment.

The Programs

There are two programs the Network manages: the Juvenile Corrections Substance Abuse Treatment Network (JCSATN) and the more recently created (2002) Substance Abuse Treatment Network for Adolescents (SATNA).

The Juvenile Corrections Substance Abuse Treatment Network was created in response to the increasing number of juvenile offenders who have substance abuse issues and who need and cannot obtain substance abuse treatment. In January of 1998, substance abuse treatment providers throughout the State formally applied for membership in the Network and a standardized screening tool, the Juvenile Automated Substance Abuse Evaluation (JASAE), was chosen for the purpose of screening and referring juvenile offenders in the State of Maine.

Because of the success of the Juvenile Corrections Substance Abuse Treatment Network, and to implement recommendations from the Third Year Evaluation Report (conducted by the University of Southern Maine, Department of Social and Behavioral Research) of the Juvenile Treatment Network and Juvenile Drug Treatment Courts, the Substance Abuse Treatment Network for Adolescents was created to address the needs of adolescents with substance abuse issues before they became involved with the juvenile justice system. This program began on July 1, 2002, and identifies adolescents who may have a substance abuse problem through participating schools and other community-based organizations Statewide. The Substance Abuse Treatment Network for Adolescents also uses the Juvenile Automated Substance Abuse Evaluation for screening and assessment purposes.

In addition to screening and referral services, the Network also has a last-resort payment source for adolescents in both programs who meet certain eligibility guidelines and are accessing further evaluation/substance abuse treatment as a result of their JASAE recommendations.

The Treatment Providers

Network member treatment providers are selected based on the following criteria:

- Agency must be licensed by the State Office of Substance Abuse.
- Agency must be Medicaid Eligible.
- Agency must provide outpatient and/or intensive outpatient substance abuse services in one or more services locations.
- Agency must adhere to Network policies.

Participating treatment providers commit to the following:

- Participation in Network-sponsored training and attendance at a minimum of three Network meetings per year.
- Incorporation of best practices into treatment programs for adolescents, with best practices defined by the Network in collaboration with the State Office of Substance Abuse and demonstrated by research;
- Use of Network-developed protocols and forms for communication between the Juvenile Treatment Network, Network Member Treatment Providers, Department of Corrections, schools and other community organizations;
- Collaboration with other Network members and participants to identify gaps in treatment services and work cooperatively to fill those gaps;
- Participation in a Network screening and referral system designed to match client needs with provider strengths;
- Development of program admission and discharge criteria consistent with best practices for adolescents; and
- Participation in Network development of policy, procedures and training designed to implement Network goals and encourage provider compliance; and
- Timely completion of required State Office of Substance Abuse Admission and Discharge forms with the appropriate Network Code.

Members of the Juvenile Treatment Network receive the following benefits:

- Last resort outpatient treatment reimbursement eligibility for providers;
- Free registration for Network-sponsored trainings;
- Participation in the Network screening and referral system;
- Input into the development of Network policy and a system of comprehensive continuum of care for adolescents;
- Participation in a data collection system that will assist in identifying barriers to substance abuse treatment services throughout the State; and
- Improved communication between referral sources and treatment providers through attendance at quarterly Network meetings.

Last Resort Funding Distribution

Network funds are available to pay for substance abuse treatment for adolescents that have no other means of payment. Adolescents must meet identified criteria to be considered eligible for last resort payment funds.

The goal of the Network is to reduce barriers to treatment services and partial funding is available if a hardship or barrier that would prevent the adolescent from accessing treatment services has been identified by the treatment provider.

Eligible adolescents must not have private insurance that will cover substance abuse treatment services. If an adolescent's coverage does not include substance abuse treatment services, or the juvenile has exceeded the allowable benefits, Network funds may be an option. If an adolescent and his/her parents do have insurance but paying their co-pay would be a financial hardship, the Network funds may be an option. This is also true if the family has a deductible that must be met before the insurance will cover services.

Any adolescent who is eligible for Medicaid is not eligible for Network funds until Medicaid resources are exhausted or if a particular service is not covered by Medicaid (e.g. assessment and other transitional services from institutional care to community-based services).

If a client can pay a certain amount per session, Network funds may be able to fund part of the session providing that the total amount does not exceed the maximum allowance listed on the Substance Abuse Treatment Network for Adolescents billing form.

By accepting Network funds for treatment services the provider agrees not to bill the adolescent/family for any fees over and above the maximum reimbursement paid by the Substance Abuse Treatment Network for Adolescents.

The Network funds will cover transportation costs for adolescents to get to and from treatment appointments. This option is available regardless of payment source. If, in the provider's judgment, transportation is a barrier to treatment, the Network funds will cover bus or cab fare, or pay mileage to the adolescent or friend/family member that drives the adolescent to and from treatment.

As with transportation costs, the Network funds will cover childcare regardless of the funding source for treatment.

Additional Services

In addition to the centralized identification, screening, referral and payment system in place, the Network also functions to facilitate collaboration between the Department of Corrections, Office of Substance Abuse, Maine Department of Behavioral and Developmental Services, Maine Juvenile Drug Treatment Courts, substance abuse treatment providers, schools, police and other community agencies. To facilitate this collaboration the Network annually hosts 28 meetings throughout the State. Representation from all of the above mentioned agencies are typically present. These meetings are a place where individuals and agencies can and do discuss barriers to treatment services and how to address these issues. The meetings also serve to provide a forum to disseminate information as it relates to the Network or the field. In addition, the Network will provide training in response to provider and other partners' needs.

The Network has a comprehensive database in which data is recorded from the JASAE assessment tool, information related to the referral for the JASAE and further evaluation as well as data relating to the last resort payment source. To date the Network has information pertaining to close to 10,000 JASAEs. This information is used in a number of ways by various agencies. This information has been used to identify trends and barriers, gauge service capacity needs and support grant proposals.

In addition, the Network has developed Policy and Procedure Manuals for all of the Network operations and has shared these manuals with other States and agencies looking to implement a similar structure to address substance abuse treatment.

Closing

Day One continues to strive for quality and comprehensiveness in all of its prevention and treatment services. Equally as important, we work diligently to address barriers to treatment and systems issues that negatively affect the ability of Maine's youth and families to access these needed treatment and recovery support services. We believe that our model, one of the first Statewide models in the Nation to build a system for adolescents that identifies youth in need of services, expands access to and improves treatment Statewide, and engages all collaborative partners, has produced positive results in a relatively short period of time. Surveys from our members support this direction and approach. We hope that the subcommittee will continue to study this model and encourage and support the expansion of adolescent prevention and treatment services nationwide. Thank you for listening to this testimony today. I would be happy to answer any questions.

Additional JASAE Screening Data

Percentage of those referred for further evaluation: **57 percent**

(Percentages below based on total number of JASAE's screened)

Male/Female ratio: **65 percent Males, 35 percent Females**

Percentages regarding living status:

Living at home with both parents: **41 percent**
Living at home with mom: **26 percent**
Living at home with dad: **8 percent**
Living with relatives: **3 percent**
Living with sister/brother: <**1 percent**
Living with non-family: **3 percent**
Living in foster home: <**1 percent**
Other: **6 percent**
Unknown (pre-data collection for this variable): **12 percent**

Percentages regarding educational status:

In school full time: **66 percent**
In school part time: **5 percent**
Suspended: **2 percent**
Quit school: **9 percent**
Kicked out of school: **4 percent**
Finished school: **2 percent**
Unknown (pre-data collection for this variable): **12 percent**

Most frequently used drug:

Alcohol: **48.5 percent**
Marijuana: **34.8 percent**
None: **10.7 percent**
Sedatives/Hypnotics: **1.2 percent**
Barbiturates, Amphetamine, Cocaine, Crack,
Hallucinogens, Heroin, Inhalants, Tranquilizers, Other: **Each** <**1 percent**

PREPARED STATEMENT OF NORMAN G. HOFFMANN, PH.D. ANA M. ABRANTES, PH.D. AND RONALD ANTON, LCPC, LADC, MAC

ABSTRACT

The PADDI (Practical Adolescent Diagnostic Interview) is a structured diagnostic interview, designed to gather basic information about substance use disorders, other mental health conditions, and related experiences. It is used for the evaluation of all adolescents committed to juvenile detention centers in Maine. Anonymous data from 230 adolescents interviewed as part of routine clinical assessments in the detention centers were analyzed to assess the prevalence and severity of problem areas of importance to correctional officials.

Results demonstrated that the majority of individuals manifested multiple problems. Relative prevalence rates and implications of the findings for clinical services and case management are discussed. The case is made for pragmatic routine intake assessments for adolescents entering the juvenile justice system.

INTRODUCTION

Observed prevalence rates for co-occurring mental health and substance use disorders vary from setting to setting, but consistently show levels suggesting a necessity for routine assessment. Estimates tend to range from about 50 percent in adolescent psychiatric populations (Grilo, Becker, Walker, Levy, Edell, & McGlashan, 1995) to as high as 80 percent among adolescents receiving services for substance dependence (Stowell & Estroff, 1992). Such differentials may be consistent with observations in adult populations that many co-existing mental health conditions may be substance-induced (Lehman, Myers, Corty, Thompson, 1994).

Concomitant psychopathology among substance abusing adolescents has been associated with significant negative consequences including more severe substance involvement, greater suicidal ideation, academic problems, and family difficulties. While it has been well established that concomitant psychopathology is associated with poorer treatment outcomes among adult substance abusing populations, recent evidence points to similar findings among adolescent substance abusers as well. Findings from the Drug Abuse Treatment Outcome Study for Adolescents (DATOS-A) showed greater substance involvement and illegal acts among adolescents with a concomitant mental health disorder compared to those without a co-occurring disorder (Grella, Hser, Joshi, Rounds-Bryant, 2001). In addition, conduct disorder among substance abusing adolescents has been associated with greater alcohol and drug involvement and poorer psychosocial functioning in young adulthood (Myers, Stewart, & Brown, 1998). Therefore, given the prevalence and clinical correlates of co-occurring disorders among adolescents, accurate identification and assessment of these disorders is crucial for the development of effective treatment interventions and reducing criminal recidivism.

While some structured interviews such as the Diagnostic Interview Schedule for Children (DISC) have been developed for evaluating co-occurring conditions, they were initially developed for research and have limitations for routine clinical applications (Shaffer, Fisher, Dulcan, et al., 1996). For example, administrations of the DISC are time consuming, averaging over one hour to complete. Extensive assessment instruments such as the GAINS (Dennis, et al., 1999) are also too time consuming to be used as an initial screening or assessment instrument for juvenile justice settings. Given the limited resources available in juvenile justice environments, these measures, while well suited for research or treatment applications, are not the optimal choice for use in these settings.

A practical instrument to accurately assess adolescents with co-occurring conditions should be adolescent-specific, developmentally appropriate, and obtain a continuous measure of symptomatology to provide indications of severity. The instrument should also demonstrate strong psychometric properties across a wide range of mental health problems, including substance use disorders. In addition, the instrument should be able to be capable of providing a foundation for diagnostic documentation in accordance with current diagnostic criteria (APA, 1994, 2000). To date, we are not aware of an assessment instrument that has demonstrated all of these characteristics.

The Practical Adolescent Dual Diagnostic Interview (PADDI) was developed as a pragmatic clinical assessment tool to standardize diagnostic assessments of adolescents (Estroff & Hoffmann, 2001). The structured questions are designed to collect information about specific symptoms and behaviors in an objective and value neutral tone. It does not attempt to cover all possible diagnoses, nor does it attempt to probe every aspect of some of the covered conditions. Rather, it is designed to address the more common symptoms and indications of problems in the context of an interview limited to approximately 30 to 45 minutes. The PADDI has demonstrated its utility in clinical populations (Hoffmann, Estroff, & Wallace, 2001) and in initial assessment of adolescents in juvenile justice settings (Hoffmann, Abrantes, & Anton, 2003). The present study considers the presenting problems for both males and females committed to juvenile detention centers. These adolescents are expected to be under the supervision for some time so that proper care and case management are likely to be an ongoing concern for juvenile justice officials.

METHODS

The PADDI is a structured diagnostic interview that covers indications of prevalent mental health conditions and substance use disorders. It is designed explicitly for use with adolescents and is not an adaptation of an adult tool. The PADDI is structured for routine clinical administration facilitated by a detailed manual (Hoffmann & Estroff, 2001). Therefore, juvenile justice personnel, trained technicians, or behavioral health professionals can administer the interview.

Interpretation of findings or making diagnostic determinations requires a professional or team of professionals with the appropriate training and expertise covering both mental health and substance use disorders. Professionals who may not have expertise in both mental health and substance use disorders can gather pertinent information to aid in determining diagnoses within their areas of competence and making focused and appropriate referrals to other professionals for those areas in which they might not practice. Juvenile justice staff can use the interview to gather sufficient information to inform referrals to professionals for further evaluation or services.

The interview includes questions related to depressive and manic episodes, mixed states, psychosis, PTSD, panic attacks, generalized anxiety and phobias, obsessive-compulsive disorder, conduct and oppositional defiant disorders, and possible paranoid and dependent personality disorders in addition to substance use disorders. Questions about dangerousness to self and others as well as victimization (physical, sexual, and emotional abuse) are also included. As mentioned, the design and branching allow the interview to be administered in a relatively short amount of time-30 to 45 minutes depending upon the extent of problems reported.

Procedures

The study obtained anonymous data consisting of the item responses to PADDI interviews conducted in routine assessments from the two detention centers in Maine. The organization providing the behavioral health coverage for the detention centers uses the PADDI as part of the standard clinical assessment. The staff removed names and unique identifiers from copies of the protocol for all consecutively admitted committed adolescents to be processed for statistical analyses of problem prevalences. These data and analyses facilitate administrative oversight of the services and comparisons of prevalences between the two facilities. They also provide the information for this report.

Sample

Data from a total of 230 adolescents (199 males and 31 females) were analyzed. Ages ranged from 13 to 18, and the average age of the sample was 16.3 (S.D.=1.10). Approximately 64 percent of the adolescents were between the ages of 16 and 17. The vast majority of the adolescents were Caucasian (88 percent), and Native Americans (5 percent) constituted the only minority ethnic group with more than 10 cases. The remainder of the sample was from other ethnic groups or of mixed ethnicity.

Educational achievement appears low for a number of these adolescents. Although more than 75 percent were over the age of 15, 38 percent had passed no higher than the 8th grade in school. Approximately 30 percent were at least 1 year behind the expected grade level for their age group. Although only 13 percent reported substantial reading difficulties, more than 50 percent had been in special classes for academic or behavioral problems.

A large number of the sample had been prescribed medication for either a medical or mental health condition. Almost two in five (37 percent) reported being on medications at the time of the interview and an additional 23 percent reported receiving medications previously.

Non-violent offences were cited as the most frequent issue related to the admission (55 percent), followed by substance related issues (42 percent). Violent offenses were acknowledged by 27 percent. There were no significant differences between males and females for the prevalence of either violent or non-violent offenses. A statistically significant differential for substance related offenses was noted with males reporting more (44 percent vs. 23 percent) than females ($p<.05$).

Analyses

Item responses from the PADDI forms were entered and verified into Excel spread sheets and converted into SPSS (Statistical Packages for the Social Science) system files for analyses. Algorithms for scoring the scales related to conditions for which the PADDI captures sufficient information to suggest a specific diagnosis. Thus the scales for symptoms of psychosis and generalized anxiety and phobias were not analyzed for placement into diagnostic groups because these scales serve more as screens than documenting diagnostic indications.

The algorithms placed individuals into one of five priorities defined categories: no symptoms, sub-diagnostic, meeting minimal criteria, exceeding minimal criteria, and far exceeding minimal criteria. The sub-diagnostic category includes individuals who reported at least one positive response, but not enough to meet the minimal indications for a diagnosis. Those in the "exceeds criteria" group report positive indications on at least one additional criterion beyond the minimum, and those in the last group typically endorsed 70 percent to 85 percent of the possible criteria items. For substance use disorders, only substance dependence was considered since it has been shown to be the more severe (Hoffmann, DeHart, & Campbell, 2002; Hoffmann, & Hoffmann, 2003) and chronic condition (Schuckit, Smith, Danko, Bucholz, Reich, & Bierut, 2001).

RESULTS

General prevalence rates for various problem areas and disorders are presented for male and female adolescents in Table 1. Although these adolescents have committed offenses resulting in commitment to a juvenile detention center, many have been victims of various forms of abuse. Abuse categories as determined by the PADDI are very conservative and require substantial indications of maltreatment. Physical abuse is defined as being hit so hard or so as to result in marks or fear of the perpetrator or to have resulted in the need for medical attention in an emergency room. Sexual abuse is identified as unwanted physical contact or coercion to engage in sexual acts. Emotional abuse is defined as being persistently ridiculed or humiliated over a period of time. Given these definitions, almost 75 percent of the females and 45 percent of the males have been subjected to some form of abuse.

Emotional and physical abuses are the most common for both genders. The majority of females (52 percent) report emotional abuse followed by sexual abuse (45 percent). For males, physical and emotional abuses are reported by about 30 percent of the adolescents. The overall prevalences for emotional and sexual abuse are greater for females at statistically significant levels.

For both genders, sexual abuse is highly related to other forms of abuse. From 36 percent to 40 percent of all sexual abuse victims report all three forms of abuse regardless of gender. Fifty percent of females and 67 percent of males who were sexually abused also report other forms of physical abuse.

TABLE 1: PROBLEM PREVALENCES† BY GENDER

Problem Area	Females N=31	Males N=199
Physically abused	36%	30%
Sexually abused **	45%	11%
Emotionally abused *	52%	28%
Any prior suicide attempts	39%	24%
Multiple prior suicide attempts	26%	18%
Considered killing someone	13%	18%
Auditory plus other hallucinations **	23%	4%
Major depressive episodes **	64%	24%
Manic episodes	40%	19%
Panic attacks	13%	8%
PTSD	36%	15%
Conduct Disorder	74%	83%
Oppositional Defiant Disorder	61%	51%
Substance Dependence	69%	60%

* p<.01; ** p<.001.
† All prevalences exclude apparent substance induced indications.

Suicidal ideation and possible suicide risks appear to be of concern with a substantial minority of cases. Overall, 26 percent of females and 18 percent of males report a history of more than one suicidal attempt or gesture. A substantial number have considered specific ways in which they might kill themselves, which may serve to increase concerns in this area.

Compared to a history or thoughts of self-harm, serious consideration of harming others appears to be considerably lower. Fewer than 20 percent of males and 15 percent of females acknowledged thoughts of serious harm to others. Positive responses to the question of harming others were positively related to confinement for a current violent offense, to acknowledging initiation of fights and to having used a weapon in a fight.

Conduct disorder and substance dependence are the most prevalent of the behavioral health conditions. However, it is probable that some behaviors associated with the substance dependence may account for a portion of the conduct disorder indications. For example, some theft or initiation of fights may be related to getting money for drugs or related to alcohol or other drug use.

Before considering some of the severity indications, for these conditions, a discussion of the other mental health areas is appropriate. The indications for psychoses, affective and anxiety disorders are of significance in that many of these conditions require medications for their proper treatment and management. While some of these disorders could be substance induced, many are likely to exist as independent conditions and will contribute to relapse to substance misuse if left unaddressed.

Indications of psychosis are problematic to assess from responses to structured questions because many of the indications of these disorders include observational information. However, acknowledgment of hallucinations does provide in indication that this area warrants further consideration. This is particularly true for auditory hallucinations in the absence of substance use or when they occur at times other than when the individual is drifting off to sleep or awakening. Of the females, 23 percent reported both auditory and other hallucinations in the absence when obvious associations with substances or sleep are excluded. In contrast, only 4 percent of males report such events.

Another area of major concern involves affective disorders because these too may indicate a need for medications for proper management of such conditions. When only a constellation of symptoms consistent with major depressive episodes is considered and exclusions for obvious substance induced instances are excluded, a majority (64 percent) of females and almost a fourth of males report such a constellation of symptoms. Manic episodes are also relatively common as can be seen in Table 1. Of particular concern are those cases where both manic and major depressive episodes are both reported by the same individual. This would suggest the possibility of an emerging bipolar disorder in which the individual alternated between depressive and manic episodes. Of the entire cohort, 13 percent report both depressive and manic episodes with symptoms levels that exceed the DSM-IV requirements for both types of episodes. This suggests that as many as one in ten of the adolescents committed to the detention centers may require mood stabilizing medications if the bipolar condition is confirmed by a psychiatrist.

Anxiety disorders may take many forms. The PADDI conducts a brief screening for generalized anxiety, phobias, and obsessive-compulsive indications, but covers panic attacks and posttraumatic stress disorder (PTSD) in greater depth. Females are more likely to reach levels of symptoms for concern for the various anxiety indicators; however, PTSD shows the greatest and most significant differential. This is not surprising in light of the level of abuse reported by females. That is, given the levels of physical, emotional, and sexual abuse, among females, it is expected that a significant number of them would report experiencing indications of PTSD.

If only the more prevalent conditions are considered (major depressive episodes, mania, PTSD, conduct disorder, and substance dependence), 92 percent of the consecutive admissions report positive indications suggesting a possible diagnosis. Even when the thresholds for each disorder is increased so as to exceed the criteria of the DSM-IV so as to decrease the likelihood that the findings might include false-positive indications, 77 percent still emerge as positive for one or more conditions. Using the more stringent requirements, almost 25 percent of the consecutive admissions are positive for only one condition, but most (52 percent) are positive for multiple conditions. Not surprisingly, the combination of substance dependence and conduct disorder is one of the most prevalent (10 percent of the cohort), but these estimates do not include possible psychoses or anxiety disorders.

For those who meet diagnostic criteria, the extent of symptoms and the pattern formed by the number of diagnostic indications provide both an indication of severity and validity for several of the diagnostic formulations. The distributions for the number of positive diagnostic indicators are in Table 2. The diagnostic and severity of seven conditions presented in the table suggest that for most conditions, the PADDI items make a relatively clear distinction for those who meet diagnostic criteria. Major depression, manic episodes, and substance dependence produce profiles where the majority of cases fall into either the category for no symptoms or the one indicating extensive symptomatology. These conditions appear more categorical while conditions such as conduct disorder appear more dimensional with more of a normal distribution of problems.

TABLE 2: SYMPTOM PROFILES FOR SELECTED CONDITIONS N=230

Condition (Lifetime)	No Symptoms	Sub-diagnostic	Minimal Criteria	Exceeds Criteria	Far Exceeds Criteria
Major Depressive Episode *	62%	8%	9%	10%	11%
Manic Episode *	73%	5%	5%	8%	9%
Panic Attacks **	81%	10%	3%	5%	1%
Posttraumatic Stress Disorder	64%	18%	1%	10%	7%
Conduct Disorder	3%	15%	35%	27%	20%
Oppositional Defiant Disorder	12%	35%	14%	7%	32%
Substance Dependence †	19%	20%	5%	8%	48%

* Substance induced conditions are counted as sub-diagnostic.

** Only symptoms for attacks in the previous 12 months are considered.

† Diagnosis considered only if use is reported in the past 12 months; abuse cases are counted in the sub-diagnostic category.

Several points need to be made concerning the categorizations in the tables. First, those individuals denying any substance use in the previous 12 months were placed into the "no symptom" category for substance dependence and those meeting abuse criteria only were placed into the "sub-diagnostic" category. Second, oppositional defiant disorder is subsumed by conduct disorder in the DSM-IV criteria. That is, if the individual meets both criteria, only the conduct disorder diagnosis is given. This is ignored in the present analyses to illustrate the profile of symptoms for both sets of items. Finally, conditions such as depression and mania that might be substance induced are placed in the "sub-diagnostic" category if the individual reports the symptoms to be associated only with use.

As can be seen in Table 2, a number of conditions present relatively clear syndromes while others do not. That is, for clear syndromes those who meet at least the minimum number of diagnostic criteria fall into the moderate to high range of symptoms while those who do not meet criteria usually have no symptoms. This results in a bimodal where the majority of individuals fall either into the no symptom category or into the moderate or above range of symptoms, and the fewest cases are seen in the sub-diagnostic or minimal criteria categories. When a clear syndrome is not found, or sees more of a normal distribution where most cases are in the sub-diagnostic to minimal criteria categories.

In the case of substance dependence, the majority of cases (67 percent) fall either in the no symptom or highest symptom groups. When the abuse only cases are considered as sub-diagnostic, 20 percent are seen in this category and only 5 percent of the cases fall into the dependence with minimal criteria met. In contrast 48 percent of the entire sample fall into the high symptom category meaning that they are positive for at least five of the seven dependence criteria. Similarly, major depressive and manic episodes appear to be categorically distributed. Most cases meeting at least minimal diagnostic criteria tend to be in the higher ranges of symptoms while the majority of cases are in the no symptom category.

On the other hand, conduct disorder symptoms appear to be distributed much differently. In this example, conduct symptoms are approaching a normal distribution with most cases falling into the minimal diagnostic category and few cases in the no symptom and highest symptom categories.

These general distributions are similar for both males and females although the exact percentages vary between the genders. Since the number of females is relatively small, no specific comparisons are made at this time.

DISCUSSION

The results of this study suggest a number of issues that merit specific discussion. First, the distribution of scores across the five diagnostic categories (no symptoms, sub-diagnostic, meeting minimal criteria, exceeding minimal criteria, and far exceeding minimal criteria) is such that, for most problem areas, a clear distinction exists between those individuals meeting DSM-IV diagnostic criteria from those that do not. This finding supports the utility of the PADDI as a screening instrument with the ability to discriminate between adolescents likely to meet diagnostic criteria for a given disorder and those who are not.

Second, the prevalence and extent of problems noted in these consecutive admissions to juvenile centers suggest that routine screening and assessment should be conducted for both mental health and substance use disorders. Many of these conditions require professional services and in some cases medications for proper care and case management.

This analyses as to most have some limitations. First, these data from the PADDI cannot definitively rule out the possibility of substance induced mental health problems and the instrument is not intended to make comprehensive diagnostic determinations on all conditions. Thus, while a positive indication on the PADDI may be a clear signal of a need for further evaluation, it is by itself not a diagnosis. Additionally, concurrent validity cannot be assumed, as no data exists to corroborate how often the PADDI's impressions are confirmed with a firm clinical diagnosis. Second, the participants in this study may not be representative of all potential users of the instrument. The study is based on consecutive admissions from facilities in a State where the number of minority individuals is small. This precludes generalizing to inner city populations where minority subcultures might influence reporting.

Despite the limitations, these analyses do provide basic statistical information on the PADDI and support for its use. Information on the severity of diagnostic conditions and forms of victimization also support the argument for routine assessment of youths entering juvenile facilities. Further research with other populations and concurrent validity measures will provide more definitive perspectives on this critical area.

REFERENCES

American Psychiatric Association (1994). *Diagnostic and Statistical Manual of Mental Disorders (4th ed.).* Washington, DC: Author.

American Psychiatric Association. (2000). *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision.*Washington, DC: Author.

Dennis, M. L., Titus, J.C., White, M., Unsicker, J., & Hodgkins, D. (2002). *Global Appraisal of Individual Needs (GAIN) Administration guide for the GAIN and related measures.* Bloomington, IL Retrieved from http//www.chestnut.org/li/gain/gadm1299.pdf.

Estroff, T. W. & Hoffmann, N.G. (2001). PADDI: *Practical Adolescent Dual Diagnosis Interview.* Smithfield, RI: Evince Clinical Assessments.

Grella, C.E., Hser, Y., Joshi, V., & Rounds-Bryant, J. (2001). Drug treatment outcomes for adolescents with comorbid mental and substance use disorders. *Journal of Nervous and Mental Disease,* 189, 384-392.

Grilo, C.M., Becker, D.F., Walker, M.L., Levy, K.N., Edell, W.S., & McGlashan, T. H. (1995). Psychiatric comorbidity in adolescent inpatients with substance use disorder. *Journal of the American Academy of Child and Adolescent Psychiatry,* 34, 1085-1091.

Hoffmann, N.G., Estroff, T.W., & Wallace, S.D. (2001). Co-occurring disorders among adolescent treatment populations. *The Dual Network,*2 (1), 10-13.

Hoffmann, N.G., DeHart, S.S., & Campbell, T.C. (2002). Dependence: Whether a disorder or a disease; it is not a “concept.” *Journal of Chemical Dependency Treatment,*8 (1), 45-56.

Hoffmann, N.G. & Hoffmann, T.D. (2003). Construct validity for alcohol dependence as indicated by the SUDDS-IV. *Journal of Substance Use and Misuse,*38 (2), 293-305.

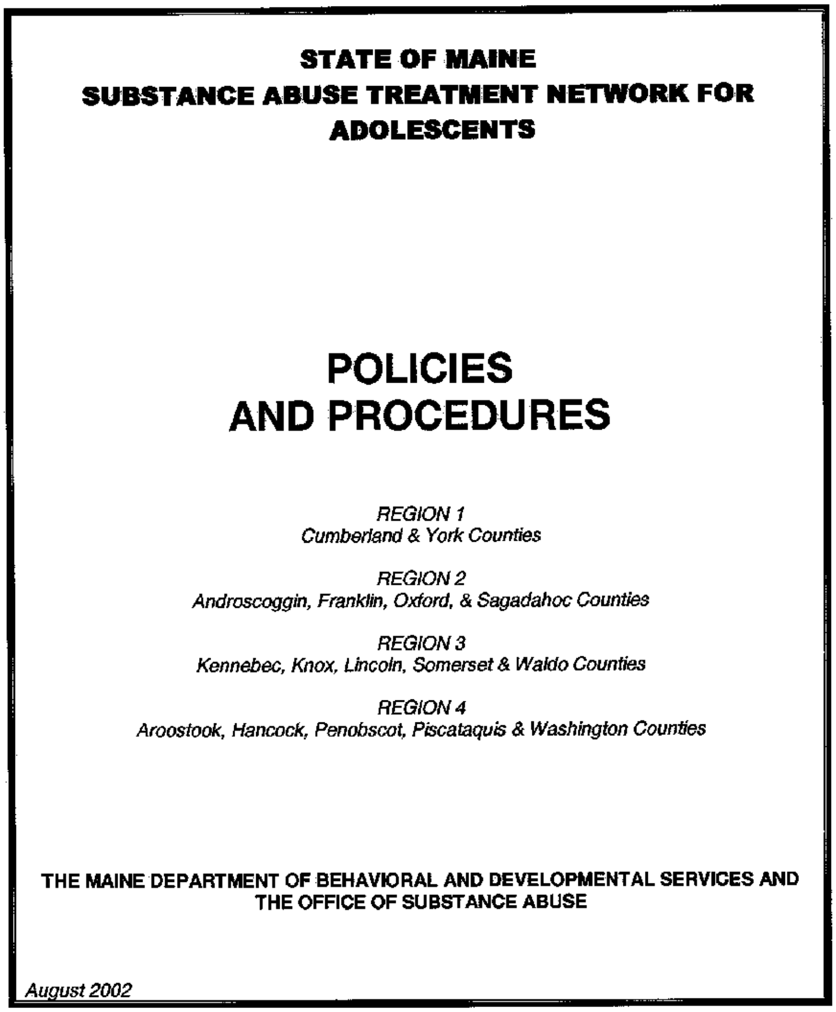
Lehman, A.F., Myers, C.P., Corty, E., & Thompson, J.W. (1994). Prevalence and patterns of “dual diagnosis” among psychiatric inpatients. *Comprehensive Psychiatry,*35, 106-112.

Myers, M.G., Stewart, D.G., & Brown, S.A. (1998). Progression from conduct disorder to antisocial personality disorder following treatment for adolescent substance abuse. *American Journal of Psychiatry,* 155, 479-485.

Schuckit, M.A., Smith, T.L., Danko, G.P., Bucholz, K.K., Reich, T., & Bierut, L. (2001). 5-year clinical course associated with DSM-IV alcohol abuse or dependence in a large group of men and women. *American Journal of Psychiatry,* 158(7):1084-1090.

Shaffer, D., Fisher, P., Dulcan, M.K., Davies, M., Piacentini, J., Schwab-Stone, M. E., Lahey, B.B., Bourdon, K., Jensen, P.S., Bird, H.R., Canino, G., & Regier, D.A. (1996). The NIMH Diagnostic Interview Schedule for Children Version 2.3 (DISC-2.3): description, acceptability, prevalence rates, and performance in the MECA Study. Methods for the Epidemiology of Child and Adolescent Mental Disorders Study. *Journal of the American Academy of Child and Adolescent Psychiatry,* 35(7), 867-877.

Stowell, R.J. & Estroff, T.W. (1992). Psychiatric disorders in substance-abusing adolescent inpatients: A pilot study. *Journal of the American Academy of Child and Adolescent Psychiatry,*31, 1036-1040.



STATE OF MAINE
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

POLICIES AND PROCEDURES

REGION 1
Cumberland & York Counties

REGION 2
Androscoggin, Franklin, Oxford, & Sagadahoc Counties

REGION 3
Kennebec, Knox, Lincoln, Somerset & Waldo Counties

REGION 4
Aroostook, Hancock, Penobscot, Piscataquis & Washington Counties

THE MAINE DEPARTMENT OF BEHAVIORAL AND DEVELOPMENTAL SERVICES AND THE OFFICE OF SUBSTANCE ABUSE

August 2002

TABLE OF CONTENTS

Introduction....................4
Mission Statement....................5
Screening and Assessment....................6
Identification, Screening & Referral Flow Chart....................7
Key Participants and Roles....................8
JASAE Administration....................9
Adolescent Contact Form-School....................10
JASAE Administration Billing Form....................11
Interagency Referrals & Case Management....................12
Rights of Clients....................12
Network Membership Guidelines....................13
Network Membership Application....................14
Network Member Criteria Exception....................15
Notification of Network Affiliation....................16
JASAE Administration Information Sheet....................17
Billing Policies and Procedures....................18
Billing Form....................20
Transportation Loan Policy and Procedures....................22
Transportation Loan Check Request Form....................23
Transportation Loan Billing Form....................24

Appendix A
Authorization for Release of Information (JASAE)
- Region I
- Region II
- Region III
- Region IV

Appendix B
JASAE Administrators
- Region I
- Region II
- Region III
- Region IV

Appendix C
Participating Schools
- Region I
- Region II
- Region III
- Region IV

Appendix D
Network Member Treatment Providers
- Region
- Region II
- Region III
- Region IV

Appendix E
Profile of Network Member Outpatient Substance Abuse Services
- Region I
- Region II
- Region III
- Region IV

Appendix F
Instructions for Administering the JASAE
Appendix G
JASAE Screening

Introduction

The Substance Abuse Treatment Network for Adolescents is modeled on the successful Juvenile Corrections Substance Abuse Treatment Network. In 2002, the Office of Substance Abuse contracted with Day One to manage the expansion of the Juvenile Corrections Substance Abuse Treatment Network to adolescents not currently in the Department of Corrections System.

The Juvenile Corrections Substance Abuse Treatment Network is a coordinated Statewide system providing a centralized screening and referral process to identify juvenile offenders with substance abuse issues. The Office of Substance Abuse and the Department of Corrections collaborated on this project and the Office of Substance Abuse contracted with Day One to staff and manage the Network.

In January 1996, treatment providers throughout the State formally applied for membership in the Network and a standardized screening tool, the Juvenile Automated Substance Abuse Evaluation (JASAE), was chosen for the purpose of screening and referring juvenile offenders in the State of Maine.

Since the JASAE screening and referral process was implemented in January 1998, 5,461 juvenile offenders have been screened. Of those 2,968 (54 percent) were referred on for a further substance abuse evaluation. The Network, as a collaborative program of the Office of Substance Abuse and the Department of Corrections, is committed to its goals of expanding the capacity of the State to provide substance abuse treatment to juveniles, and to enhance the continuum of care as juveniles move in the justice and treatment systems.

The Juvenile Treatment Network employs two Regional Support Coordinators to work within the four Department of Corrections regions and provide support for JCCOs and Network providers within their respective regions. The Substance Abuse Treatment Network for Adolescents will continue to work within these four regions to maintain a continuity of services. The Regional Support Coordinators schedule and facilitate quarterly meetings within each region to allow for discussion between JCCOs, community based organizations and Network providers on a variety of issues including problems/issues identified by the JASAE, best practice approaches to treatment, communication and information sharing, and other community issues.

Mission Statement

To foster collaboration throughout the State of Maine between community based organizations and providers of adolescent substance abuse treatment services, so that adolescents can access appropriate levels of assessment and treatment that match client needs with provider strengths.

Maine Department of Behavioral and Developmental Services, Office of Substance Abuse, Marquardt Building, 3rd Floor—AMHI Complex, 159 State House Station, Augusta, ME 04333-0159, Phone (207) 287-2595, FAX (207) 287-4334 or 287-8910, http://www.state.me.us/bds/osa.

Network Administrator: Day One, Juvenile Treatment Network, 525 Main St., South Portland, ME 04106, PHONE (207) 842-3637, FAX (207) 842-3639, http://www.JuvenileTreatmentNetwork.org.

SCREENING AND ASSESSMENT

Screening

The purpose in using the Juvenile Automated Substance Abuse Evaluation (JASAE©) standardized screening tool is to identify adolescents that may have a problem abusing substances, or the potential for developing a problem. Adolescents identified by the JASAE screening (see Appendix G) as having a problem, or the potential for one, will be referred to a Network Member Treatment Provider for a full substance abuse evaluation to determine whether or not further services are needed.

The Juvenile Substance Abuse Treatment Network for Adolescents has in place a centralized screening and referral system. Network affiliated schools have access to a Network trained JASAE administrator (hence forth referred to as JASAE administrator) who will administer the JASAE to juveniles referred by a Network authorized school contact (hence forth referred to as school contact). Once the juvenile has taken the JASAE screening the Network Coordinator will contact the juvenile and parent or guardian, if authorized by the juvenile, of the JASAE screening referral recommendations. If the juvenile scores high enough he/she will be referred to a Network Member Treatment Provider for a further substance abuse evaluation.

In addition, the Network will communicate with the school contact to give recommendations for further substance abuse evaluation and school based services follow up based on the JASAE screening results.

Criteria for Referring Adolescents for JASAE Screeninq

When referring a juvenile for the JASAE screening please use the following criteria:

1. AGE:

Refer adolescent if between the ages of 12 and 20 and currently enrolled or attempting to enroll in school (does not apply to post secondary education). Ages 11 and under refer directly to provider for evaluation.

2. NOTICEABLE SUDDEN CHANGES IN ADOLESCENTS:

Refer the adolescent for a JASAE screening if any sudden changes have occurred in:

☐ School performance
☐ School attendance
☐ Change in peers
☐ Interest in extra curricular activities
☐ General disposition or personality

3. VIOLATION OF CHEMICAL HEALTH POLICY HAS OCCURRED

Refer the adolescent for a JASAE screening if the juvenile has violated the school chemical health policy.

SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

IDENTIFICATION, SCREENING AND REFERRAL FLOW CHART

1)

- Adolescent is identified by nurse, primary teacher, guidance counselor or other school personnel and referred to school contact.
- School contact administers JASAE screening or refers juvenile to JASAE administrator for JASAE screening.

2)

- JASAE administrator gives the JASAE in school setting or outside agency location.
- JASAE administrator has adolescent sign consent for release form and contact form.
- JASAE administrator sends bubble sheet, consent for release of confidential information and JASAE referral form to the Network office.

3)

- Network office scores JASAE.
- Network office records data and creates file.
- If adolescent scores high enough on the JASAE, adolescent will be referred for further substance abuse evaluation to a Network Member Treatment Provider.
- A full copy of the screening is sent to the Network Member Treatment Provider.
- Network Coordinator communicates JASAE referral recommendations by mail and/or phone follow up with parent/legal guardian.

4)

- Network will communicate with the school contact to give recommendations for further substance abuse evaluation based on the JASAE screening results.

KEY PARTICIPANTS AND ROLES

Network Affiliated Schools

- Identification of adolescent by school personnel who may refer adolescents to take the JASAE.

School Contact

- Timely and appropriate referral to a Network trained JASAE administrator.
- Collaborates with Network Member Treatment Provider to coordinate appropriate services.
- May be trained by Network staff to administer the JASAE.

Network Member Treatment Providers

- May be trained as JASAE administrator by Network staff.
- Receive referrals for further substance abuse evaluation and outpatient substance abuse treatment services.

- Collaborate with the school contact to coordinate appropriate services.

The Juvenile Treatment Network

- Scoring of JASAE screening.
- Data collection and record keeping.
- If the adolescent scores high enough, referral to a Network member treatment provider for a further substance abuse evaluation.
- If authorized, shares JASAE screening results with Network Member Treatment Provider.
- Communicates with school contact to give recommendations for further substance abuse evaluation.
- Shares recommendations for further substance abuse evaluation with parent or legal/guardian.

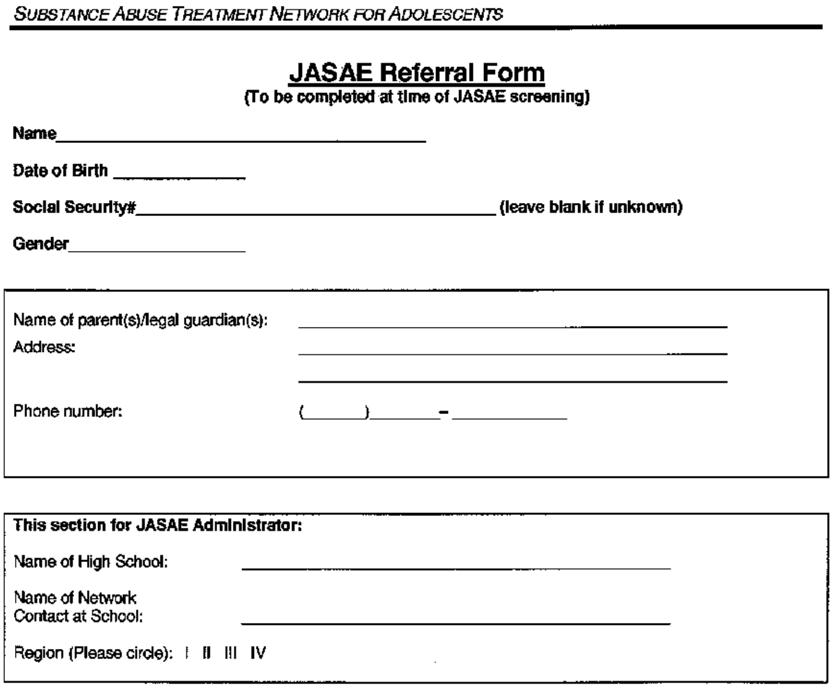
JASAE ADMINISTRATION

JASAE Administrators must have completed a training session with ADE Inc., the developer and owner of the JASAE screening tool, or a Network staff person. The JASAE Administrator will have documentation of JASAE training completion on file. Please see Appendix F for step-by-step instructions on how to administer the JASAE.

JASAE Administrators administering the JASAE on behalf of agencies participating in the Network will receive $15 per individual JASAE screening or $20 per group JASAE screening. The Network will pay for up to two JASAE no-shows on one adolescent for an individual JASAE screening if the agency schedules the adolescent for a third time and he/she does not show, the Network will not cover the no-show fee.

JASAE Administrators will receive timely JASAE screening referrals from school contacts. The JASAE administrator will conduct the screening per Network policy and forward the JASAE screening answer sheet, Authorization for Release of Information and JASAE referral form to the Network office for scoring within 5–7 days of completion. The Network will score and distribute results (or inform the school contact and/or JASAE administrators of problems with the completed JASAE) within 1–2 days after receipt of the completed JASAE. If the juvenile scores high enough he/she will be referred to a Network Member Treatment Provider for a further substance abuse evaluation. In addition, the Juvenile Treatment Network will communicate with the school contact to give recommendations for further substance abuse evaluation based on the JASAE screening results.

Recommendations based on the JASAE screening will be shared with the parent/legal guardian. Once a client has signed the Authorization for Release of Information there should not be any changes made to the form without the client’s permission.



SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JASAE Referral Form

(To be completed at time of JASAE screening)

Name____________________________________

Date of Birth ______________

Social Security#____________________________________ **(leave blank if unknown)**

Gender___________________

Name of parent(s)/legal guardian(s): ____
Address: ____
____

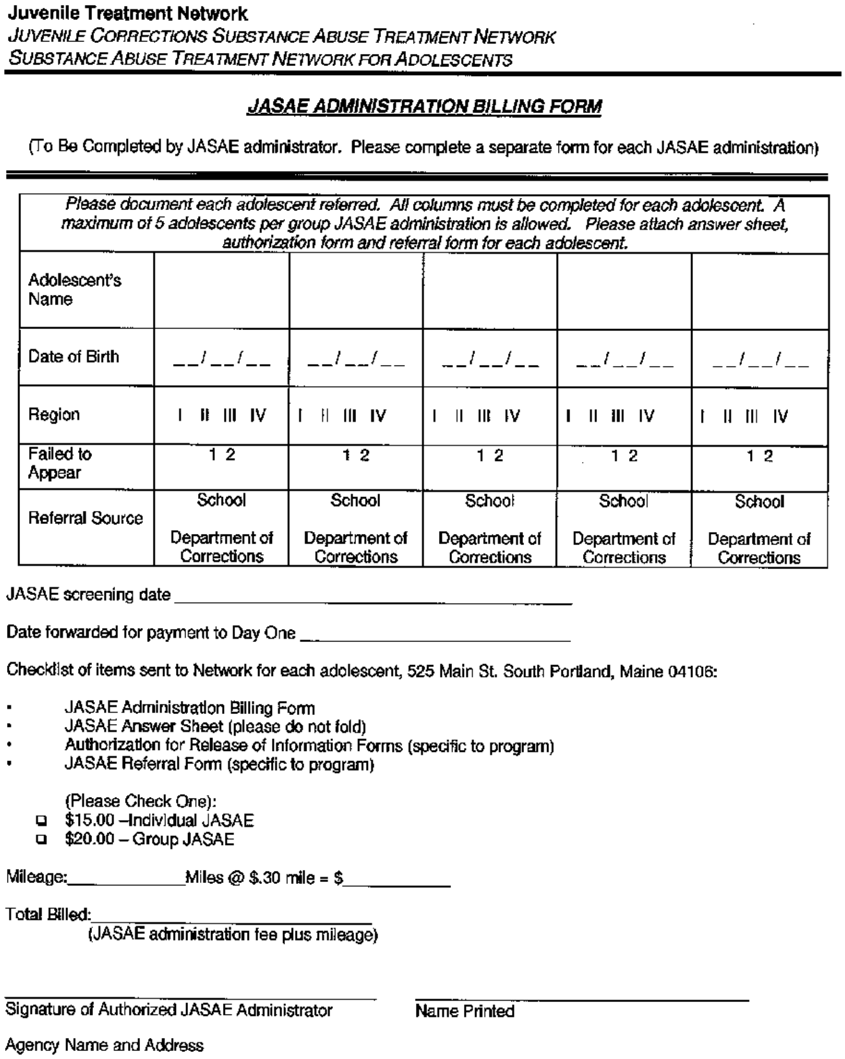
Phone number: (______)_______ - ____________

This section for JASAE Administrator:

Name of High School: ____

Name of Network
Contact at School: ____

Region (Please circle): I II III IV



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JASAE ADMINISTRATION BILLING FORM

(To Be Completed by JASAE administrator. Please complete a separate form for each JASAE administration)

Please document each adolescent referred. All columns must be completed for each adolescent. A maximum of 5 adolescents per group JASAE administration is allowed. Please attach answer sheet, authorization form and referral form for each adolescent.

Adolescent's Name					
Date of Birth	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__
Region	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV
Failed to Appear	1 2	1 2	1 2	1 2	1 2
Referral Source	School Department of Corrections	School Department of Corrections	School Department of Corrections	School Department of Corrections	School Department of Corrections

JASAE screening date ______________________

Date forwarded for payment to Day One ______________________

Checklist of items sent to Network for each adolescent, 525 Main St. South Portland, Maine 04106:

- JASAE Administration Billing Form
- JASAE Answer Sheet (please do not fold)
- Authorization for Release of Information Forms (specific to program)
- JASAE Referral Form (specific to program)

(Please Check One):
☐ $15.00 –Individual JASAE
☐ $20.00 – Group JASAE

Mileage:__________Miles @ $.30 mile = $__________

Total Billed:______________________
(JASAE administration fee plus mileage)

______________________ ______________________
Signature of Authorized JASAE Administrator Name Printed

Agency Name and Address

INTERAGENCY REFERRALS AND CASE MANAGEMENT

Network members provide not only a variety of services but have differing service capacities. Some of these treatment providers serve overlapping geographic areas. To maximize resources and provide for proper client/service matching, Network members are encouraged to refer clients they are either unable to serve (e.g., limited space) or who require specialized service provided by another Network member. Adolescents will be referred to treatment programs that meet their individual profiles. To assist Network members, a list of member services for each region is provided (see Appendix A). This list will be updated on an annual basis.

The treatment provider performing the evaluation or providing treatment services is responsible for recommending new or additional services and any transitional programming. Recommendations will be made to the client.

The client and the treatment provider resolve payment for treatment services. Medicaid and private insurance will be utilized whenever possible. Client self-pay will be used according to the provider's individual scale. When none of these payment sources are available, the provider may access OSA Contract Funds, managed by the Network, in accordance with policy and procedures established by the Office of Substance Abuse. Please see the section titled, "Billing Policies and Procedures" for more information on these funds.

RIGHTS OF CLIENTS

The client has the final choice of services and provider. Network treatment providers will inform clients that, although Network members are recommended service providers, other choices do exist. When requested by the client, Network members will inform the client of other treatment providers.

Participation by the juvenile in the Substance Abuse Treatment Network for Adolescents is voluntary. Information about the juvenile may only be shared with the juvenile's consent in the form of a signed, initialed and witnessed authorization for release of information meeting CFR 42 criteria. Under no circumstances should the juvenile be coerced to participate in the Juvenile Treatment Network at any level, against their wishes.

NETWORK MEMBERSHIP GUIDELINES

Members of the Juvenile Treatment Network commit to the following:

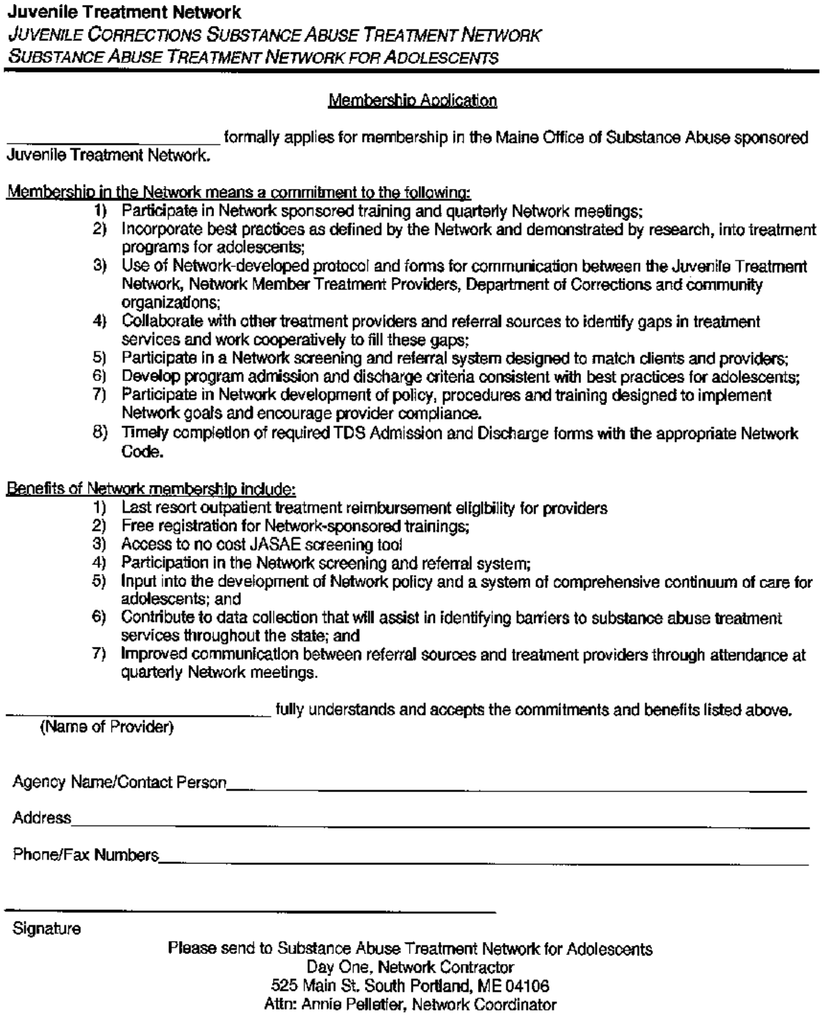
- Participation in Network-sponsored training and attendance at a minimum of three Network meetings per year (Network members failing to attend at least three meetings will not receive free registration for Network-sponsored trainings and will not receive Network referrals);
- Incorporation of best practices as defined by the Network and demonstrated by research, into treatment programs for adolescents;
- Use of Network-developed protocol and forms for communication between the Juvenile Treatment Network, Network Member Treatment Providers, Department of Corrections and community organizations;
- Collaboration with other Network members and participants to identify gaps in treatment services and work cooperatively to fill those gaps;
- Participation in a Network screening and referral system designed to match clients and providers;
- Development of program admission and discharge criteria consistent with best practices for adolescents; and
- Participation in Network development of policy, procedures and training designed to implement Network goals and encourage provider compliance; and
- Timely completion of required TDS Admission and Discharge forms with the appropriate Network Code.

Members of the Juvenile Treatment Network receive the following benefits:

- Last resort outpatient treatment reimbursement eligibility for providers;
- Free registration for Network-sponsored trainings;
- Participation in the Network screening and referral system;
- Input into the development of Network policy and a system of comprehensive continuum of care for adolescents;
- Contribute to data collection that will assist in identifying barriers to substance abuse treatment services throughout the State; and
- Improved communication between referral sources and treatment providers through attendance at quarterly Network meetings.

Network membership criteria:

- Agency must be licensed by the Office of Substance Abuse.
- Agency must be Medicaid eligible.
- Agency must provide outpatient and/or intensive outpatient substance abuse services in one or more service locations.
- Agency must adhere to Network policies.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

Membership Application

______________________ formally applies for membership in the Maine Office of Substance Abuse sponsored Juvenile Treatment Network.

Membership in the Network means a commitment to the following:

1) Participate in Network sponsored training and quarterly Network meetings;
2) Incorporate best practices as defined by the Network and demonstrated by research, into treatment programs for adolescents;
3) Use of Network-developed protocol and forms for communication between the Juvenile Treatment Network, Network Member Treatment Providers, Department of Corrections and community organizations;
4) Collaborate with other treatment providers and referral sources to identify gaps in treatment services and work cooperatively to fill these gaps;
5) Participate in a Network screening and referral system designed to match clients and providers;
6) Develop program admission and discharge criteria consistent with best practices for adolescents;
7) Participate in Network development of policy, procedures and training designed to implement Network goals and encourage provider compliance.
8) Timely completion of required TDS Admission and Discharge forms with the appropriate Network Code.

Benefits of Network membership include:

1) Last resort outpatient treatment reimbursement eligibility for providers
2) Free registration for Network-sponsored trainings;
3) Access to no cost JASAE screening tool
4) Participation in the Network screening and referral system;
5) Input into the development of Network policy and a system of comprehensive continuum of care for adolescents; and
6) Contribute to data collection that will assist in identifying barriers to substance abuse treatment services throughout the state; and
7) Improved communication between referral sources and treatment providers through attendance at quarterly Network meetings.

____________________________ fully understands and accepts the commitments and benefits listed above.
(Name of Provider)

Agency Name/Contact Person____

Address____

Phone/Fax Numbers____

____
Signature

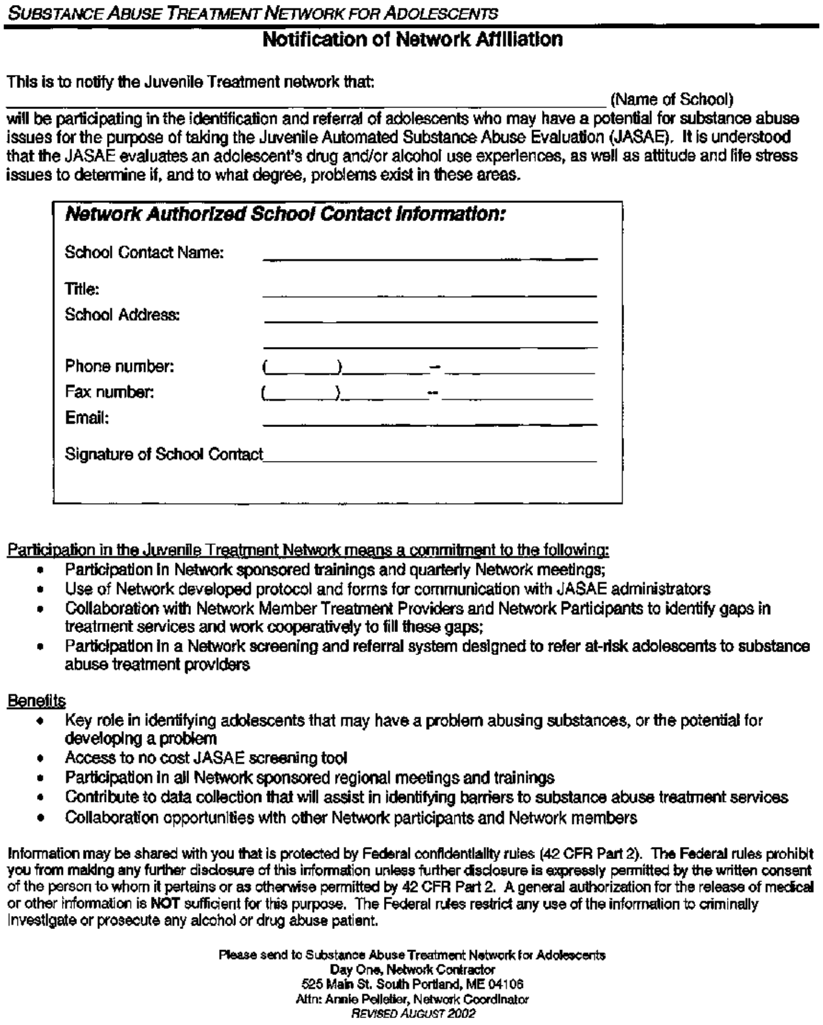
Please send to Substance Abuse Treatment Network for Adolescents
Day One, Network Contractor
525 Main St. South Portland, ME 04106
Attn: Annie Pelletier, Network Coordinator

NETWORK MEMBER CRITERIA EXCEPTION

The Juvenile Treatment Network will accept membership from individual practitioners who are not OSA agency licensed and who work in a rural area where there is no other Network Member Treatment Provider Agency within a 30-mile radius.

If a treatment provider who meets Network criteria for membership joins the Juvenile Treatment Network within the 30-mile radius, the individual practitioner will no longer receive referrals from the Juvenile Treatment Network.

The Juvenile Treatment Network will continue to fund juveniles currently on that individual practitioner's caseload who meet Juvenile Treatment Network criteria for funding. The Juvenile Treatment Network will not extend this exception to any Substance Abuse Treatment Agency that is eligible for OSA agency licensure and Medicaid seed.



SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

Notification of Network Affiliation

This is to notify the Juvenile Treatment network that:

______________________________ (Name of School)

will be participating in the identification and referral of adolescents who may have a potential for substance abuse issues for the purpose of taking the Juvenile Automated Substance Abuse Evaluation (JASAE). It is understood that the JASAE evaluates an adolescent's drug and/or alcohol use experiences, as well as attitude and life stress issues to determine if, and to what degree, problems exist in these areas.

Network Authorized School Contact Information:

School Contact Name: ______________________

Title: ______________________

School Address: ______________________

____

Phone number: (____)______-__________

Fax number: (____)______-__________

Email: ______________________

Signature of School Contact______________________

Participation in the Juvenile Treatment Network means a commitment to the following:

- Participation in Network sponsored trainings and quarterly Network meetings;
- Use of Network developed protocol and forms for communication with JASAE administrators
- Collaboration with Network Member Treatment Providers and Network Participants to identify gaps in treatment services and work cooperatively to fill these gaps;
- Participation in a Network screening and referral system designed to refer at-risk adolescents to substance abuse treatment providers

Benefits

- Key role in identifying adolescents that may have a problem abusing substances, or the potential for developing a problem
- Access to no cost JASAE screening tool
- Participation in all Network sponsored regional meetings and trainings
- Contribute to data collection that will assist in identifying barriers to substance abuse treatment services
- Collaboration opportunities with other Network participants and Network members

Information may be shared with you that is protected by Federal confidentiality rules (42 CFR Part 2). The Federal rules prohibit you from making any further disclosure of this information unless further disclosure is expressly permitted by the written consent of the person to whom it pertains or as otherwise permitted by 42 CFR Part 2. A general authorization for the release of medical or other information is **NOT** sufficient for this purpose. The Federal rules restrict any use of the information to criminally investigate or prosecute any alcohol or drug abuse patient.

Please send to Substance Abuse Treatment Network for Adolescents
Day One, Network Contractor
525 Main St. South Portland, ME 04106
Attn: Annie Pelletier, Network Coordinator
REVISED AUGUST 2002

Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JASAE Administrator Information Sheet

Date ____________

Agency Name:
____

Office Locations: (Please list all your offices and their complete addresses)
____
____
____
____
____
____
____
____

Agency Contact Person

Name: ____________________________

Phone: ____________________________

Fax: ____________________________

Email: ____________________________

For Network Office Use Only:

Date of JASAE Administration Training: ____________________________

Individuals Trained: ____________________________
____
____
____

Region I II III IV

BILLING POLICIES AND PROCEDURES

In 2002 the Juvenile Treatment Network received continued and expanded funding from the Office of Substance Abuse in anticipation of the conclusion of the Targeted Capacity Expansion grant from the Center for Substance Abuse Treatment. Network funds are available to pay for substance abuse treatment for adolescents that have no other means of payment. **The Network funds are to be used as a last resort for payment, therefore, Network providers will be asked to provide information about the juvenile's household income and/or insurance to ensure that only eliqible juveniles are receiving Network funds. It is the Network Member Treatment Provider's responsibility to exhaust all other funding sources with the client before submitting bills for Network funds.**

Following are the criteria that adolescents must meet in order to be considered eligible for Network funds. If there is any question as to whether or not an adolescent is eligible for Network funds, please call the Network Coordinator at 842–3637. **Under no circumstances should a family member or insurance agency be**

referred to the Network regarding payment. The Network funds are for providers to access for eligible adolescents.

Client does not have private insurance that will pay for outpatient substance abuse treatment services. Eligible adolescents must not have private insurance that will cover substance abuse treatment services. If an adolescent's coverage does not include substance abuse treatment services, or the juvenile has exceeded the allowable benefits, Network funds may be an option. If an adolescent's insurance will cover certain "in-network" providers, and there are no Network providers in the geographic area, Network funds may be an option. However, if there is a Network agency within the geographic area that is considered "in-network" by the insurance company, the adolescents may be referred to that provider. If an adolescent and his/her parents do have insurance but paying their co-pay would be a financial hardship, the Network funds may be an option. This is also true if the family has a deductible that must be met before the insurance will cover services.

Approved documentation of insurance denial must be submitted with the billing form for Network funds.

Client is not eligible for Medicaid. Any adolescent who is eligible for Medicaid is not eligible for Network funds. There is space on the billing form for providers to report the number of people in an adolescent's household and that household's income. If the income falls between 100–150 percent of the Federal poverty level, the adolescent may be eligible for Medicaid and that option will need to be explored by the client before Network funds can pay for services. Although this is not the only indication of whether or not an adolescent is eligible for Medicaid, it is currently the only feasible way for the Network to determine if an adolescent is eligible to receive Network funds to cover treatment. If the family has applied for Medicaid and been denied, approved documentation of denial must be submitted with the billing form for Network funds.

Client cannot pay the full cost of treatment based on the provider's sliding fee scale. If a client can pay a certain amount per session, Network funds may be able to fund part of the session providing that the total amount does not exceed the maximum allowance listed on the Substance Abuse Treatment Network for Adolescents billing form. For example, if a Juvenile Treatment Network provider's hourly rate for family counseling is $85 per hour, and the family can afford to pay $20 per hour, the Network funds may be able to cover $55 per hour, as the maximum allowable reimbursement for Network funding is $75 per hour for family counseling.

Client has taken the JASAE screening. An adolescent is not considered part of the Substance Abuse Treatment Network for Adolescents until he/she has taken the JASAE screening by referral through their high school.

Please keep in mind:

- Any incomplete billing forms will be returned to the provider, e.g., the household size and income has not been filled out; and
- By accepting Network funds for treatment services the provider agrees not to bill the adolescent/family for any fees over and above the maximum reimbursement paid by the Substance Abuse Treatment Network for Adolescents.

Transportation

The Network will cover transportation costs for adolescents to get to and from treatment appointments. **THIS OPTION IS AVAILABLE REGARDLESS OF THE ADOLESCENT'S FUNDING SOURCE FOR TREATMENT.** If, in the provider's judgment, transportation is a barrier to treatment, the Network funds will cover bus or cab fare, or pay mileage ($.30/mile) to the adolescent or friend/family member that drives the adolescent to and from treatment. While the Network funds will cover mileage to and from treatment appointments, it will not cover mileage for a friend or family member to drive back home, or somewhere else, while waiting for the adolescent.

The Juvenile Treatment Network provider is responsible for reimbursing the adolescent or friend/family member at the appointment and submitting a Substance Abuse Treatment Network for Adolescents billing form to the Juvenile Treatment Network for the amount. If this is a hardship for the Network Member Treatment Provider and creates a barrier to outpatient substance abuse treatment services for adolescents, please apply for a Transportation Loan (see table of contents).

In order to be eligible for transportation reimbursement from the Network funds, the adolescent must have had a JASAE. The Juvenile Treatment Network provider is required to complete a TDS admission and discharge form.

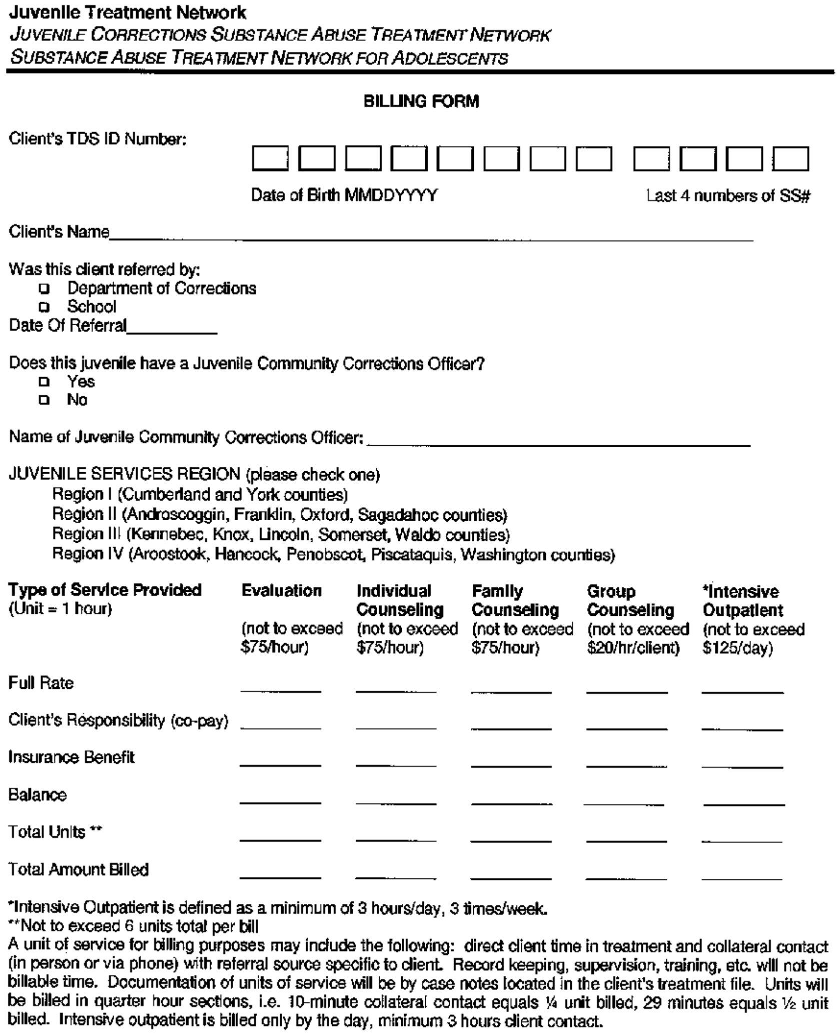
Child Care

As with transportation costs, the Network funds will cover childcare (up to $10 per treatment session) for adolescents **REGARDLESS OF THE FUNDING SOURCE FOR TREATMENT.**

In order to be eligible for childcare reimbursement from the Network funds, the adolescent must have had a JASAE and the treatment provider is required to complete a TDS admission and discharge form. The Juvenile Treatment Network provider is responsible for reimbursing the adolescent at the appointment and submitting a Substance Abuse Treatment Network for Adolescents billing form to the Juvenile Treatment Network for the amount.

Please Include the following when submitting for billing:

- (Required) Completed Juvenile Treatment Network Billing Form.
- (Required) Copy of Completed TDS admission Form for client with appropriate Network code-**23021-99.**
- Any relevant supportive documentation for last resort payment source.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

BILLING FORM

Client's TDS ID Number: ☐☐☐☐☐☐☐☐ ☐☐☐☐
Date of Birth MMDDYYYY — Last 4 numbers of SS#

Client's Name____________________

Was this client referred by:
- ☐ Department of Corrections
- ☐ School

Date Of Referral_________

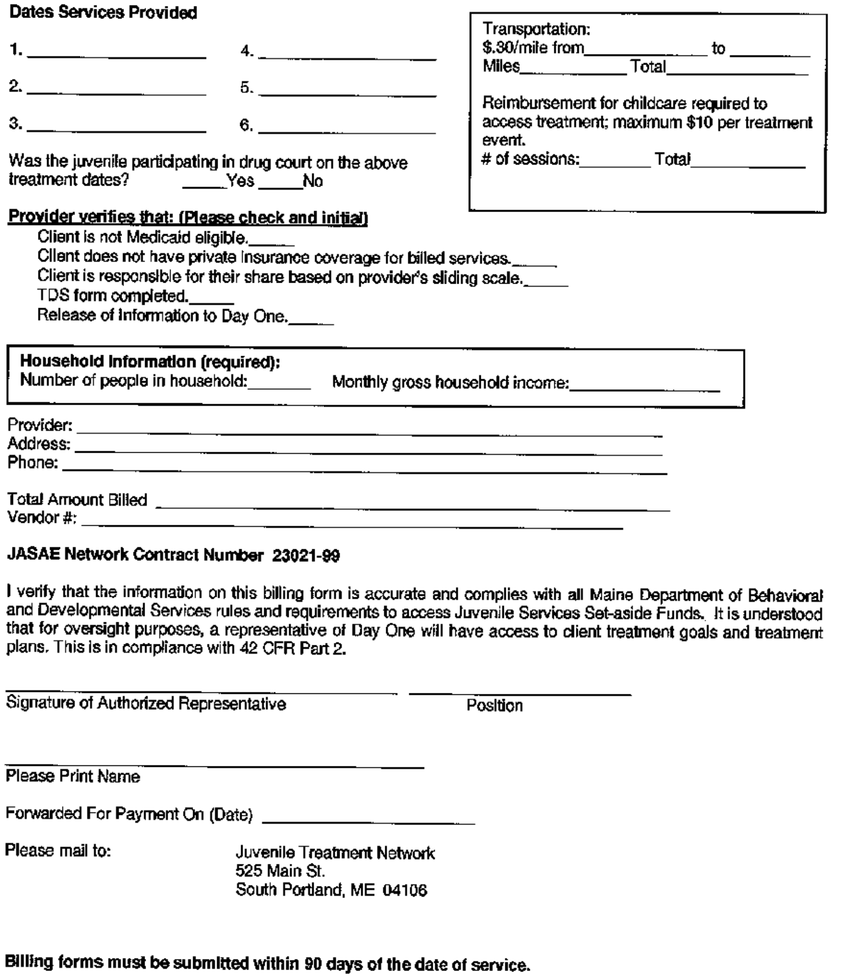
Does this juvenile have a Juvenile Community Corrections Officer?
- ☐ Yes
- ☐ No

Name of Juvenile Community Corrections Officer:____________________

JUVENILE SERVICES REGION (please check one)
Region I (Cumberland and York counties)
Region II (Androscoggin, Franklin, Oxford, Sagadahoc counties)
Region III (Kennebec, Knox, Lincoln, Somerset, Waldo counties)
Region IV (Aroostook, Hancock, Penobscot, Piscataquis, Washington counties)

Type of Service Provided (Unit = 1 hour)	**Evaluation** (not to exceed $75/hour)	**Individual Counseling** (not to exceed $75/hour)	**Family Counseling** (not to exceed $75/hour)	**Group Counseling** (not to exceed $20/hr/client)	***Intensive Outpatient** (not to exceed $125/day)
Full Rate	________	________	________	________	________
Client's Responsibility (co-pay)	________	________	________	________	________
Insurance Benefit	________	________	________	________	________
Balance	________	________	________	________	________
Total Units **	________	________	________	________	________
Total Amount Billed	________	________	________	________	________

*Intensive Outpatient is defined as a minimum of 3 hours/day, 3 times/week.
**Not to exceed 6 units total per bill
A unit of service for billing purposes may include the following: direct client time in treatment and collateral contact (in person or via phone) with referral source specific to client. Record keeping, supervision, training, etc. will not be billable time. Documentation of units of service will be by case notes located in the client's treatment file. Units will be billed in quarter hour sections, i.e. 10-minute collateral contact equals ¼ unit billed, 29 minutes equals ½ unit billed. Intensive outpatient is billed only by the day, minimum 3 hours client contact.



Dates Services Provided

1. ________ 4. ________
2. ________ 5. ________
3. ________ 6. ________

Was the juvenile participating in drug court on the above treatment dates? ____Yes ____No

Transportation:
$.30/mile from________ to ________
Miles________ Total________

Reimbursement for childcare required to access treatment; maximum $10 per treatment event.
# of sessions:________ Total________

Provider verifies that: (Please check and initial)

Client is not Medicaid eligible.____
Client does not have private insurance coverage for billed services.____
Client is responsible for their share based on provider's sliding scale.____
TDS form completed.____
Release of Information to Day One.____

Household Information (required):
Number of people in household:______ Monthly gross household income:________

Provider: ________
Address: ________
Phone: ________

Total Amount Billed ________
Vendor #: ________

JASAE Network Contract Number 23021-99

I verify that the information on this billing form is accurate and complies with all Maine Department of Behavioral and Developmental Services rules and requirements to access Juvenile Services Set-aside Funds. It is understood that for oversight purposes, a representative of Day One will have access to client treatment goals and treatment plans. This is in compliance with 42 CFR Part 2.

________ ________
Signature of Authorized Representative Position

____
Please Print Name

Forwarded For Payment On (Date) ________

Please mail to:

Juvenile Treatment Network
525 Main St.
South Portland, ME 04106

Billing forms must be submitted within 90 days of the date of service.

JUVENILE TREATMENT NETWORK

TRANSPORTATION LOAN

BILLING POLICIES AND PROCEDURES

The Juvenile Treatment Network transportation loan is available for providers to access when current Juvenile Treatment Network transportation reimbursement procedures are a barrier to treatment services. Upon submission of a check request form from the Network provider to the Juvenile Treatment Network office, Day One will issue a check to the provider to be used for transportation expenses as they occur for clients eligible for transportation funds. Day One will create a debit account in an amount not to exceed $200 in the provider's name. **THE PROVIDER WILL CONTINUE TO BILL FOR CLIENTS,** using the **Transportation Billing Form** but instead of receiving payment, the billable amount will be subtracted from the debit account until a zero balance is reached. At that time the provider may request another Transportation loan.

Transportation loan funds may be used to cover transportation costs for juveniles to get to and from treatment appointments. **THIS OPTION IS AVAILABLE REGARDLESS OF THE JUVENILE'S FUNDING SOURCE FOR TREATMENT.** If, in the provider's judgment, transportation is a barrier to treatment, the transportation funds can cover bus or cab fare, or pay mileage ($.30/mile) to the juvenile or friend/family member that drives the juvenile to and from treatment. While the Transportation Loan Funds can cover mileage to and from treatment appointments, it will not cover mileage for a friend or family member to drive back home, or somewhere else, while waiting for the juvenile.

KEEP IN MIND THAT IN ORDER FOR CLIENTS TO BE ELIGIBLE FOR SET-ASIDE FUNDS, THE FOLLOWING CRITERIA MUST BE MET:

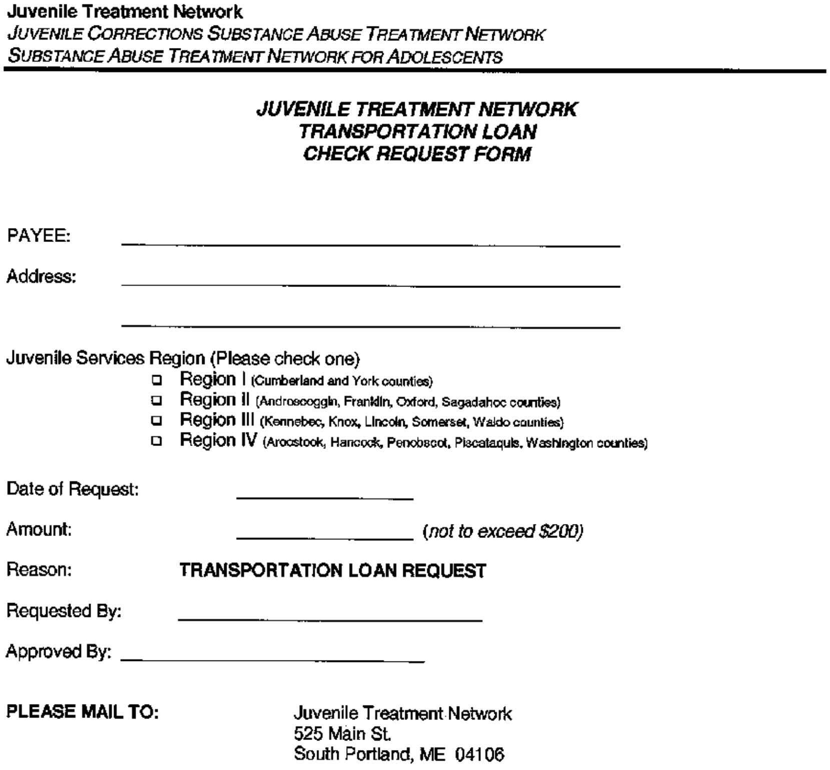
- The client must have had a JASAE.
- A TDS admission form must be completed for the adolescent.

To obtain a Transportation Loan, providers must submit a **Juvenile Treatment Network Transportation Fund Check Request Form** to the Juvenile Treatment Network office at:

JUVENILE TREATMENT NETWORK

525 MAIN ST.

SOUTH PORTLAND, ME 04106



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JUVENILE TREATMENT NETWORK
TRANSPORTATION LOAN
CHECK REQUEST FORM

PAYEE: ______________________________

Address: ______________________________

____

Juvenile Services Region (Please check one)

- ☐ Region I (Cumberland and York counties)
- ☐ Region II (Androscoggin, Franklin, Oxford, Sagadahoc counties)
- ☐ Region III (Kennebec, Knox, Lincoln, Somerset, Waldo counties)
- ☐ Region IV (Aroostook, Hancock, Penobscot, Piscataquis, Washington counties)

Date of Request: ______________

Amount: ______________ *(not to exceed $200)*

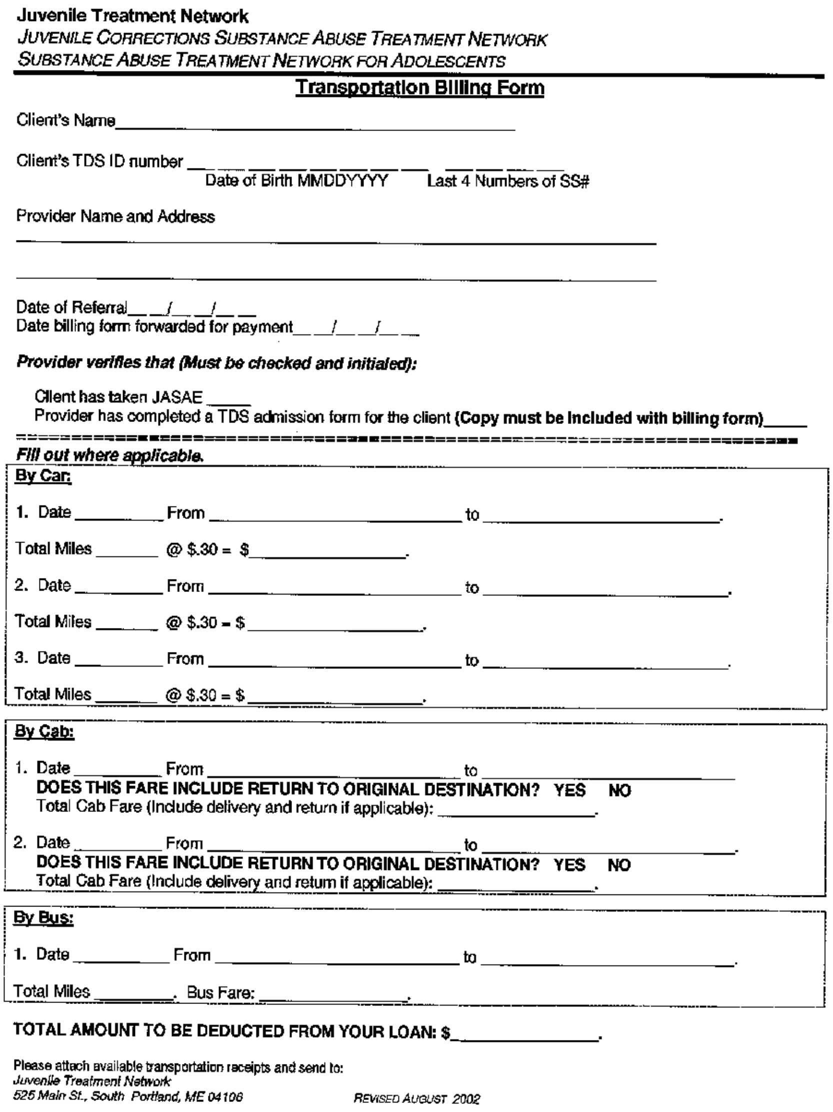
Reason: **TRANSPORTATION LOAN REQUEST**

Requested By: ____________________

Approved By: ____________________

PLEASE MAIL TO:

Juvenile Treatment Network
525 Main St.
South Portland, ME 04106



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

Transportation Billing Form

Client's Name ______________________________

Client's TDS ID number __ __ __ __ __ __ __ __ __ __ __ __
Date of Birth MMDDYYYY Last 4 Numbers of SS#

Provider Name and Address
____
____

Date of Referral __ __/__ __/__ __
Date billing form forwarded for payment __ __/__ __/__ __

Provider verifies that (Must be checked and initialed):

Client has taken JASAE _____
Provider has completed a TDS admission form for the client **(Copy must be included with billing form)**_____

Fill out where applicable.

By Car:

1. Date _________ From _____________________ to _____________________.
Total Miles ______ @ $.30 = $ ______________.
2. Date _________ From _____________________ to _____________________.
Total Miles ______ @ $.30 = $ ______________.
3. Date _________ From _____________________ to _____________________.
Total Miles ______ @ $.30 = $ ______________.

By Cab:

1. Date _________ From _____________________ to _____________________
DOES THIS FARE INCLUDE RETURN TO ORIGINAL DESTINATION? YES NO
Total Cab Fare (Include delivery and return if applicable): ______________.
2. Date _________ From _____________________ to _____________________.
DOES THIS FARE INCLUDE RETURN TO ORIGINAL DESTINATION? YES NO
Total Cab Fare (Include delivery and return if applicable): ______________.

By Bus:

1. Date _________ From _____________________ to _____________________.
Total Miles ________. Bus Fare: ______________.

TOTAL AMOUNT TO BE DEDUCTED FROM YOUR LOAN: $______________.

Please attach available transportation receipts and send to:
Juvenile Treatment Network
525 Main St., South Portland, ME 04106

REVISED AUGUST 2002

STATE OF MAINE
JUVENILE CORRECTIONS
SUBSTANCE ABUSE TREATMENT NETWORK

NETWORK POLICIES AND PROCEDURES

REGION 1
Cumberland & York Counties

REGION 2
Androscoggin, Franklin, Oxford, & Sagadahoc Counties

REGION 3
Kennebec, Knox, Lincoln, Somerset & Waldo Counties

REGION 4
Aroostook, Hancock, Penobscot, Piscataquis & Washington Counties

A Collaborative Effort Between:
THE OFFICE OF SUBSTANCE ABUSE AND
THE DEPARTMENT OF CORRECTIONS/JUVENILE SERVICES

August 2002

TABLE OF CONTENTS

Introduction........... 4

Mission Statement...5

Screening and Assessment...6

JASAE Screening Referral Form 7

JASAE Administration Billing Form..8

Restrictions on Re-Disclosure...9

Interagency Referrals & Case Management 10

Rights of Clients 10

Network Membership Guidelines 11

Network Membership Application 12

Network Member Criteria Exception.......................................13

JASAE Administrator Information Sheet.................................14

Billing Policies and Procedures 15

Billing Form..17

Transportation Loan Policies and Procedures.........................19

Transportation Loan Check Request Form..............................20

Transportation Loan Billing Form...21

Communication & Sharing Information Between Juvenile Community Corrections Officers and Treatment Providers 22

Appendix A
Authorization for Release of Information (JASAE)
  Region I
  Region II
  Region III
  Region IV
Appendix B
JASAE Administrators
  Region I
  Region II
  Region III
  Region IV
Appendix C
Juvenile Community Corrections Officers
  Region I
  Region II
  Region III
  Region IV
Appendix D
Network Treatment Providers
  Region I
  Region II

  Region III
  Region IV
Appendix E
Profile of Network Member Outpatient Substance Abuse Services
  Region I
  Region II
  Region III
  Region IV
Appendix F
Instructions for Administering the JASAE
Appendix G
JASAE Screening
Juvenile Corrections Substance Abuse Treatment Network

INTRODUCTION

The Juvenile Corrections Substance Abuse Treatment Network is a coordinated Statewide system providing a centralized screening and referral process to identify juvenile offenders with substance abuse issues. The Office of Substance Abuse and the Department of Corrections collaborated on this project and the Office of Substance Abuse contracted with Day One to staff and manage the Network.

In January 1998, treatment providers throughout the State formally applied for membership in the Network and a standardized screening tool, the Juvenile Automated Substance Abuse Evaluation (JASAE), was chosen for the purpose of screening and referring juvenile offenders in the State of Maine.

The referral for the JASAE is made by the Juvenile Community Corrections Officer (JCCO) and is administered by a Network agency or the JCCO in some cases. The screening is scored at the Network office, where it is determined, based on the JASAE results, whether or not the juvenile should be referred to one of the 60 Network providers for a substance abuse evaluation. Many times, the JCCO refers for the JASAE even if he/she has no further action with a juvenile. Therefore, we believe we are able to identify substance abuse problems early on in a juvenile's contact with the justice system.

Since the JASAE screening and referral process was implemented in January 1998, 5,427 juvenile offenders have been screened. Of those 5,427, 2,950 (54 percent) were referred on for a further substance abuse evaluation. The Network, as a collaborative program of the Office of Substance Abuse and the Department of Corrections, is committed to its goals to expand the capacity of the State to provide substance abuse treatment to juveniles, and to enhance the continuum of care as juveniles move in the justice and treatment systems.

The Network employs two Regional Support Coordinators to work within the four Department of Corrections regions and provide support for JCCOs and Network providers within their respective regions. The Regional Support Coordinators schedule and facilitate quarterly meetings within each region to allow for discussion between JCCOs and Network providers on a variety of issues including problems/issues identified by the JASAE, best practice approaches to treatment, communication and information sharing, and other community issues.

MISSION STATEMENT

Structured collaboration between substance abuse treatment providers and Juvenile Community Corrections Officers in every region of the Department of Corrections to provide access to treatment that matches client needs with provider strengths for all juvenile offenders.

(Maine Department of Behavioral and Developmental Services, Marquardt Building, 3rd Floor—AMHI Complex, 159 State House Station, Augusta, ME 04333–0159, Phone (207) 287–2595; FAX (207) 287–4334 or 287–8910, http://www.state.me.us/bds/osa.) (Maine Department of Corrections, Juvenile Services Division, 111 State House Station, Augusta, ME 04333-0111, Phone (207) 287–2470, FAX (207) 287–5150.) (Network Contractor/Administrator: Day One, Juvenile Treatment Network, 525 Main Street, South Portland, ME 04106, PHONE (207) 842–3637, FAX (207) 842–3639, http://www.JuvenileTreatmentNetwork.org.)

SCREENING AND ASSESSMENT

Screening

The purpose in using the Juvenile Automated Substance Abuse Evaluation (JASAE) standardized screening tool is to identify juvenile offenders that may have a problem abusing substances, or the potential for developing a problem. Juvenile offenders identified by the JASAE screening (see Appendix G) as having a problem, or the potential for one, will be referred to a Network provider for a full substance abuse evaluation to determine whether or not further services are needed.

The Juvenile Corrections Substance Abuse Treatment Network has in place a centralized screening and referral system. All Juvenile Community Corrections Officers (JCCOs) have access to a provider who will administer the JASAE (Appendix B) to juveniles referred by the Department of Corrections. The JCCO may refer a juvenile for the JASAE at any point during the juvenile's contact with the justice system, including informal adjustment, probation, and aftercare. Juvenile Community Corrections Officers may administer the JASAE themselves if they choose. In many cases this will be more efficient and result in quicker referral for services than relying on a middle person for JASAE administration. Juvenile Community Corrections Officers are asked to use the following criteria when referring a juvenile for the JASAE screening.

CRITERIA FOR REFERRING ADOLESCENTS FOR JASAE SCREENING

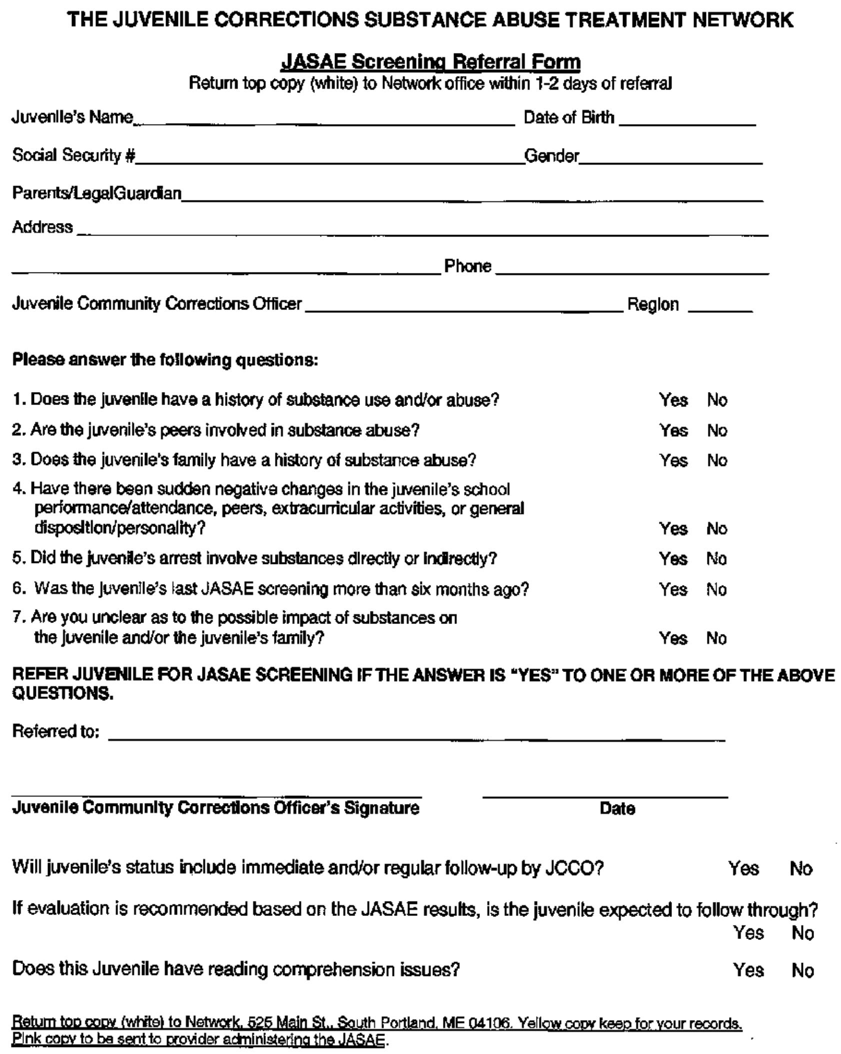
1. **Age**—Refer adolescent if between the ages of 12 and 18. If juvenile is under 12, refer directly to a Network provider for an assessment.
2. **Peer Group**—Refer adolescent if it is known that he/she has peers who are involved in substance use.
3. **History**—Refer adolescent if it is known that he/she or a family member has a history of substance use and/or abuse.
4. **Change**—Refer adolescent if any sudden changes in the following have occurred: school performance/attendance, change in peers, interest in extracurricular activities and general disposition/personality.
5. **Arrest**—Refer adolescent if his/her arrest involved substances directly or indirectly.
6. **Unsure**—Refer adolescent if there is any doubt at all.
7. **Previous JASAE Screening**—Refer adolescent if he/she took the JASAE screening more than 6 months ago. In some cases it may be appropriate to refer the juvenile for another JASAE if it has been less than 6 months since the last one (see #4 above, "Change").

JASAE Administrators must have completed a training session with ADE Inc., the developer and owner of the JASAE screening tool, or a Network staff person. The JASAE Administrator will have documentation of JASAE training completion on file. Please see Appendix F for step-by-step instructions on how to administer the JASAE.

JASAE Administrators will receive $15 per individual JASAE plus mileage if necessary, or $20 per group JASAE administration **(not to exceed 5 juveniles).** The Network will pay for up to two JASAE no-shows on one juvenile for each individual JASAE administration—if the agency schedules the juvenile for a third time and he/she does not show, the Network will not cover the no-show fee.

All completed JASAEs are forwarded to the BDS contractor, Day One, for scoring within 5–7 days of completion. The Network/Day One will score and distribute the results, or inform JCCOs and/or JASAE administrators of problems with the completed JASAE, within 1–2 days after receipt of the completed JASAE. The full results and a summary are sent to the Juvenile Community Corrections Officer. With the client's written consent a summary is sent to the parents or guardian with recommendations for follow-up evaluation when indicated by the screening results. All referrals for follow-up services will be made to regional Network members (see Appendix D) when indicated by the client on the Authorization for Release of Information (see Appendix A). Once a client has signed the Authorization for Release of Information there should not be any changes made to the form without the client's permission.

If a juvenile is referred for a full evaluation, the parent/guardian will receive a phone call from the Network Coordinator to ensure that there are no questions or concerns about the screening and/or results. Any parent/guardian not able to be contacted by phone will receive a letter from the Network Coordinator with a reference sheet including frequently asked questions about the JASAE and the answers to those questions.



THE JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK

JASAE Screening Referral Form

Return top copy (white) to Network office within 1-2 days of referral

Juvenile's Name____________________ Date of Birth __________

Social Security #____________________Gender__________

Parents/LegalGuardian____________________

Address ____________________

____________________ Phone ____________________

Juvenile Community Corrections Officer ____________________ Region ______

Please answer the following questions:

1. Does the juvenile have a history of substance use and/or abuse?	Yes	No
2. Are the juvenile's peers involved in substance abuse?	Yes	No
3. Does the juvenile's family have a history of substance abuse?	Yes	No
4. Have there been sudden negative changes in the juvenile's school performance/attendance, peers, extracurricular activities, or general disposition/personality?	Yes	No
5. Did the juvenile's arrest involve substances directly or indirectly?	Yes	No
6. Was the juvenile's last JASAE screening more than six months ago?	Yes	No
7. Are you unclear as to the possible impact of substances on the juvenile and/or the juvenile's family?	Yes	No

REFER JUVENILE FOR JASAE SCREENING IF THE ANSWER IS "YES" TO ONE OR MORE OF THE ABOVE QUESTIONS.

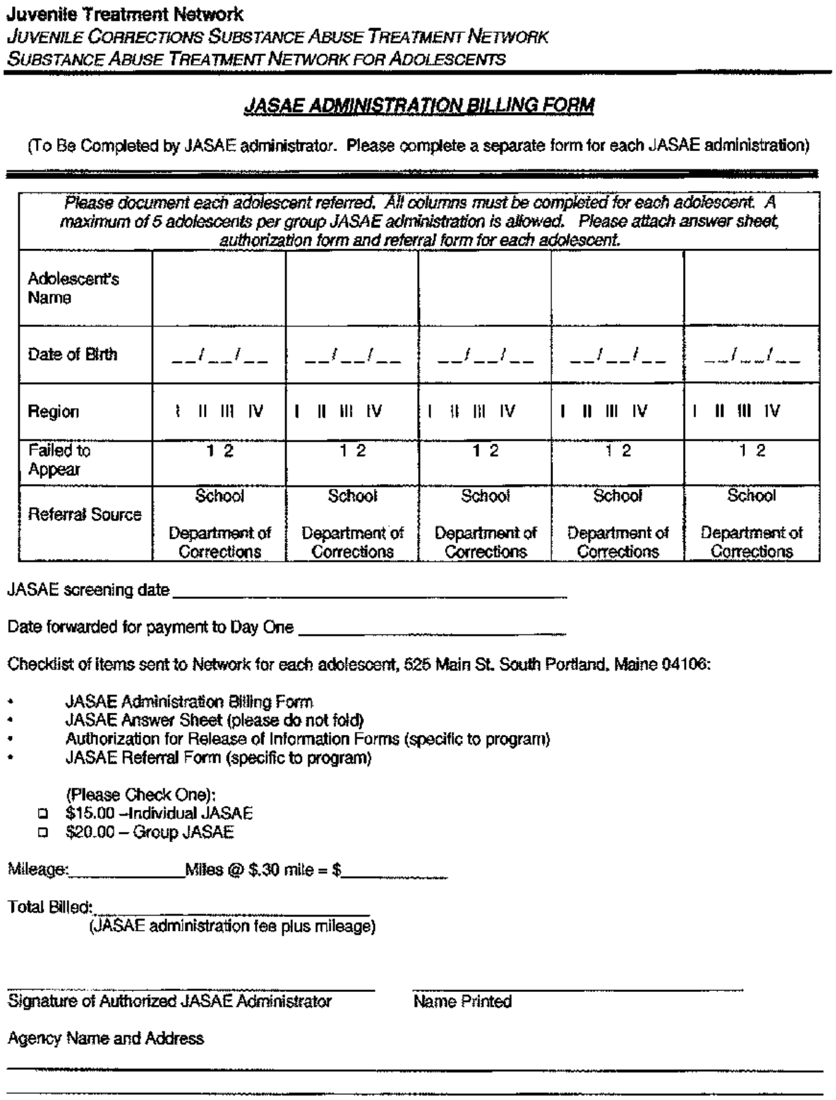
Referred to: ____________________

____________________ ____________________

Juvenile Community Corrections Officer's Signature **Date**

Will juvenile's status include immediate and/or regular follow-up by JCCO?	Yes	No
If evaluation is recommended based on the JASAE results, is the juvenile expected to follow through?	Yes	No
Does this Juvenile have reading comprehension issues?	Yes	No

Return top copy (white) to Network, 525 Main St., South Portland, ME 04106. Yellow copy keep for your records.
Pink copy to be sent to provider administering the JASAE.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JASAE ADMINISTRATION BILLING FORM

(To Be Completed by JASAE administrator. Please complete a separate form for each JASAE administration)

Please document each adolescent referred. All columns must be completed for each adolescent. A maximum of 5 adolescents per group JASAE administration is allowed. Please attach answer sheet, authorization form and referral form for each adolescent.

Adolescent's Name					
Date of Birth	__/__/__	__/__/__	__/__/__	__/__/__	__/__/__
Region	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV
Failed to Appear	1 2	1 2	1 2	1 2	1 2
Referral Source	School Department of Corrections	School Department of Corrections	School Department of Corrections	School Department of Corrections	School Department of Corrections

JASAE screening date ____________________________

Date forwarded for payment to Day One ____________________

Checklist of items sent to Network for each adolescent, 525 Main St. South Portland, Maine 04106:

- JASAE Administration Billing Form
- JASAE Answer Sheet (please do not fold)
- Authorization for Release of Information Forms (specific to program)
- JASAE Referral Form (specific to program)

(Please Check One):
☐ $15.00 –Individual JASAE
☐ $20.00 – Group JASAE

Mileage:__________Miles @ $.30 mile = $__________

Total Billed:____________________
(JASAE administration fee plus mileage)

____________________________ ____________________________
Signature of Authorized JASAE Administrator Name Printed

Agency Name and Address
____
____

RESTRICTIONS ON REDISCLOSURE

Notice prohibiting redisclosure must accompany any disclosure made with patient's consent (42 CFR § 2.32). Each disclosure made with the patient's written consent must be accompanied by the following statement:

Prohibition on Redisclosure of Information Concerning Client in Alcohol or Drug Abuse Treatment

This notice pertains to any disclosure of information concerning a client in alcohol/drug abuse treatment, made to you with consent of such client. This information has been made to you from records protected by Federal confidentiality rules (42 CFR Part 2). The Federal rules prohibit you from making any further disclosure of this information unless further disclosure is expressly permitted by the written consent of the person to whom it pertains or as otherwise permitted by 42 CFR Part 2. A general authorization for the release of medical or other information is **NOT** sufficient for this purpose. The Federal rules restrict any use of the information to criminally investigate or prosecute any alcohol or drug abuse patient.

INTERAGENCY REFERRALS AND CASE MANAGEMENT

Network members provide not only a variety of services but have differing service capacities. Some of these treatment providers serve overlapping geographic areas. To maximize resources and provide for proper client/service matching, Network members are encouraged to refer clients they are either unable to serve (e.g., limited space) or who require specialized service provided by another Network member.

Juveniles will be referred to treatment programs that meet their individual profiles. To assist Network members, a list of member services for each region is provided (see Appendix E). This list will be updated on an annual basis.

The treatment provider performing the evaluation or providing treatment services is responsible for recommending new or additional services and any transitional programming. Recommendations will be made to the Juvenile Community Corrections Officer and the client.

The client and the treatment provider resolve payment for treatment services. Medicaid and private insurance will be utilized whenever possible. Client self-pay will be used according to the provider's individual scale. When none of these payment sources are available, the provider may access Targeted Capacity Expansion grant funds, managed by the Network, in accordance with policy and procedures established by the Office of Substance Abuse. Please see the section titled, "Billing Policies and Procedures" for more information on these funds.

RIGHTS OF CLIENTS

Notwithstanding conditions for probation imposed by the Juvenile Community Corrections Officer, the client has the final choice of services and provider. Network treatment providers and Juvenile Community Corrections Officers will inform clients that, although Network members are recommended service providers, other choices do exist. When requested by the client, Network members will inform the client of other treatment providers.

NETWORK MEMBERSHIP GUIDELINES

Members of the Juvenile Treatment Network commit to the following:

- Participation in Network-sponsored training and attendance at a minimum of three Network meetings per year (Network members failing to attend at least three meetings will not receive free registration for Network-sponsored trainings and will not receive Network referrals);
- Incorporation of best practices as defined by the Network and demonstrated by research, into treatment programs for adolescents;
- Use of Network-developed protocol and forms for communication between the Juvenile Treatment Network, Network Member Treatment Providers, Department of Corrections and community organizations;
- Collaboration with other Network members and participants to identify gaps in treatment services and work cooperatively to fill those gaps;
- Participation in a Network screening and referral system designed to match clients and providers;
- Development of program admission and discharge criteria consistent with best practices for adolescents; and
- Participation in Network development of policy, procedures and training designed to implement Network goals and encourage provider compliance; and
- Timely completion of required TDS Admission and Discharge forms with the appropriate Network Code.

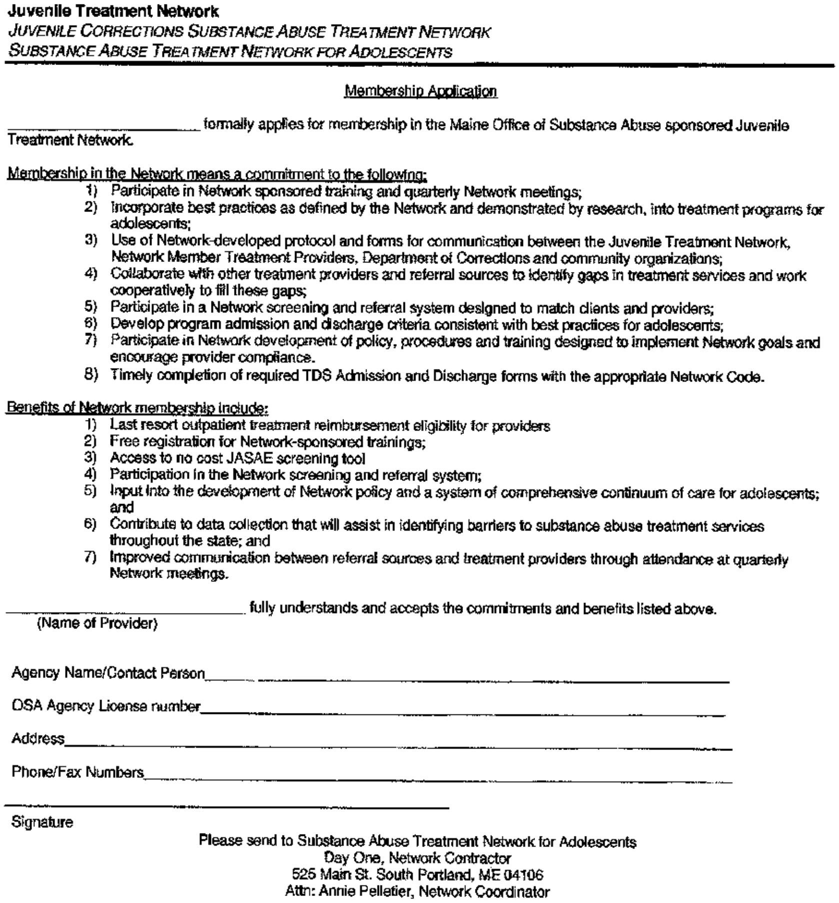
Members of the Juvenile Treatment Network receive the following benefits:

- Last resort outpatient treatment reimbursement eligibility for providers;
- Free registration for Network-sponsored trainings;
- Participation in the Network screening and referral system;
- Input into the development of Network policy and a system of comprehensive continuum of care for adolescents;
- Contribute to data collection that will assist in identifying barriers to substance abuse treatment services throughout the State; and
- Improved communication between referral sources and treatment providers through attendance at quarterly Network meetings.

Network membership criteria

- Agency must be licensed by the Office of Substance Abuse.

- Agency must be Medicaid eligible.
- Agency must provide outpatient and/or intensive outpatient substance abuse services in one or more service locations.
- Agency must adhere to Network policies.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

Membership Application

____________________ formally applies for membership in the Maine Office of Substance Abuse sponsored Juvenile Treatment Network.

Membership in the Network means a commitment to the following:

1) Participate in Network sponsored training and quarterly Network meetings;
2) Incorporate best practices as defined by the Network and demonstrated by research, into treatment programs for adolescents;
3) Use of Network-developed protocol and forms for communication between the Juvenile Treatment Network, Network Member Treatment Providers, Department of Corrections and community organizations;
4) Collaborate with other treatment providers and referral sources to identify gaps in treatment services and work cooperatively to fill these gaps;
5) Participate in a Network screening and referral system designed to match clients and providers;
6) Develop program admission and discharge criteria consistent with best practices for adolescents;
7) Participate in Network development of policy, procedures and training designed to implement Network goals and encourage provider compliance.
8) Timely completion of required TDS Admission and Discharge forms with the appropriate Network Code.

Benefits of Network membership include:

1) Last resort outpatient treatment reimbursement eligibility for providers
2) Free registration for Network-sponsored trainings;
3) Access to no cost JASAE screening tool
4) Participation in the Network screening and referral system;
5) Input into the development of Network policy and a system of comprehensive continuum of care for adolescents; and
6) Contribute to data collection that will assist in identifying barriers to substance abuse treatment services throughout the state; and
7) Improved communication between referral sources and treatment providers through attendance at quarterly Network meetings.

____________________ fully understands and accepts the commitments and benefits listed above.
(Name of Provider)

Agency Name/Contact Person____________________

OSA Agency License number____________________

Address____________________

Phone/Fax Numbers____________________

____
Signature

Please send to Substance Abuse Treatment Network for Adolescents
Day One, Network Contractor
525 Main St. South Portland, ME 04106
Attn: Annie Pelletier, Network Coordinator

NETWORK MEMBER CRITERIA EXCEPTION

The Juvenile Treatment Network will accept membership from individual practitioners who are not OSA agency licensed and who work in a rural area where there is no other Network Member Treatment Provider Agency within a 30-mile radius.

If a treatment provider who meets Network criteria for membership joins the Juvenile Treatment Network within the 30-mile radius, the individual practitioner will no longer receive referrals from the Juvenile Treatment Network.

The Juvenile Treatment Network will continue to fund juveniles currently on that individual practitioner's caseload who meet Juvenile Treatment Network criteria for funding. The Juvenile Treatment Network will not extend this exception to any Substance Abuse Treatment Agency that is eligible for OSA agency licensure and Medicaid seed.

Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JASAE Administrator Information Sheet

Date ____________

Agency Name:
____

Office Locations: (Please list all your offices and their complete addresses)
____
____
____
____
____
____
____
____

Agency Contact Person

Name: ______________________________

Phone: ______________________________

Fax: ______________________________

Email: ______________________________

For Network Office Use Only:

Date of JASAE Administration Training: ______________________________

Individuals Trained: ______________________________
____
____
____

Region I II III IV

BILLING POLICIES AND PROCEDURES

In 2002 the Juvenile Treatment Network received continued and expanded funding from the Office of Substance Abuse in anticipation of the conclusion of the Targeted Capacity Expansion grant from the Center for Substance Abuse Treatment. Network funds are available to pay for substance abuse treatment for adolescents that have no other means of payment. **The Network funds are to be used as a last resort for payment, therefore, Network providers will be asked to provide information about the juvenile's household income and/or insurance to ensure that only eligible juveniles are receiving Network funds. It is the Network Member Treatment Provider's responsibility to exhaust all other funding sources with the client before submitting bills for Network funds.**

Following are the criteria that adolescents must meet in order to be considered eligible for Network funds. If there is any question as to whether or not an adolescent is eligible for Network funds, please call the Network Coordinator at 842-3637. **Under no circumstances should a family member or insurance agency be referred to the Network regarding payment.** The Network funds are for providers to access for eligible adolescents.

Client does not have private insurance that will pay for outpatient substance abuse treatment services. Eligible adolescents must not have private insurance that will cover substance abuse treatment services. If an adolescent's coverage does not include substance abuse treatment services, or the juvenile has exceeded the allowable benefits, Network funds may be an option. If an adolescent's insurance will cover certain "in-network" providers, and there are no Network providers in the geographic area, Network funds may be an option. However, if there is a Network agency within the geographic area that is considered "in-network" by the insurance company, the adolescents may be referred to that provider.

If an adolescent and his/her parents do have insurance but paying their co-pay would be a financial hardship, the Network funds may be an option. This is also true if the family has a deductible that must be met before the insurance will cover services.

Approved documentation of insurance denial must be submitted with the billing form for Network funds.

Client is not eligible for Medicaid. Any adolescent who is eligible for Medicaid is not eligible for Network funds. There is space on the billing form for providers to report the number of people in an adolescent's household and that household's income. If the income falls between 100-150 percent of the Federal poverty level, the adolescent may be eligible for Medicaid and that option will need to be explored by the client before Network funds can pay for services. Although this is not the only indication of whether or not an adolescent is eligible for Medicaid, it is currently the only feasible way for the Network to determine if an adolescent is eligible to receive Network funds to cover treatment. If the family has applied for Medicaid and been denied, approved documentation of denial must be submitted with the billing form for Network funds.

Client cannot pay the full cost of treatment based on the provider's sliding fee scale. If a client can pay a certain amount per session, Network funds may be able to fund part of the session providing that the total amount does not exceed the maximum allowance listed on the Substance Abuse Treatment Network for Adolescents billing form. For example, if a Juvenile Treatment Network provider's hourly rate for family counseling is $85 per hour, and the family can afford to pay $20 per hour, the Network funds may be able to cover $55 per hour, as the maximum allowable reimbursement for Network funding is $75 per hour for family counseling.

Client has taken the JASAE screening. An adolescent is not considered part of the Substance Abuse Treatment Network for Adolescents until he/she has taken the JASAE screening by referral through their high school or JCCO.

Please keep in mind:

- Any incomplete billing forms will be returned to the provider, e.g., the household size and income has not been filled out; and
- By accepting Network funds for treatment services the provider agrees not to bill the adolescent/family for any fees over and above the maximum reimbursement paid by the Substance Abuse Treatment Network for Adolescents.

Transportation

The Network funds will cover transportation costs for adolescents to get to and from treatment appointments. **THIS OPTION IS AVAILABLE REGARDLESS OF THE ADOLESCENT'S FUNDING SOURCE FOR TREATMENT.** If, in the provider's judgment, transportation is a barrier to treatment, the Network funds will cover bus or cab fare, or pay mileage ($.30/mile) to the adolescent or friend/family member that drives the adolescent to and from treatment. While the Network funds will cover mileage to and from treatment appointments, it will not cover mileage for a friend or family member to drive back home, or somewhere else, while waiting for the adolescent.

The Juvenile Treatment Network provider is responsible for reimbursing the adolescent or friend/family member at the appointment and submitting a Substance Abuse Treatment Network for Adolescents billing form to the Juvenile Treatment Network for the amount. If this is a hardship for the Network Member Treatment Provider and creates a barrier to outpatient substance abuse treatment services for adolescents, please apply for a Transportation Loan (see table of contents).

In order to be eligible for transportation reimbursement from the Network funds, the adolescent must have had a JASAE. The Juvenile Treatment Network provider is required to complete a TDS admission and discharge form.

Child Care

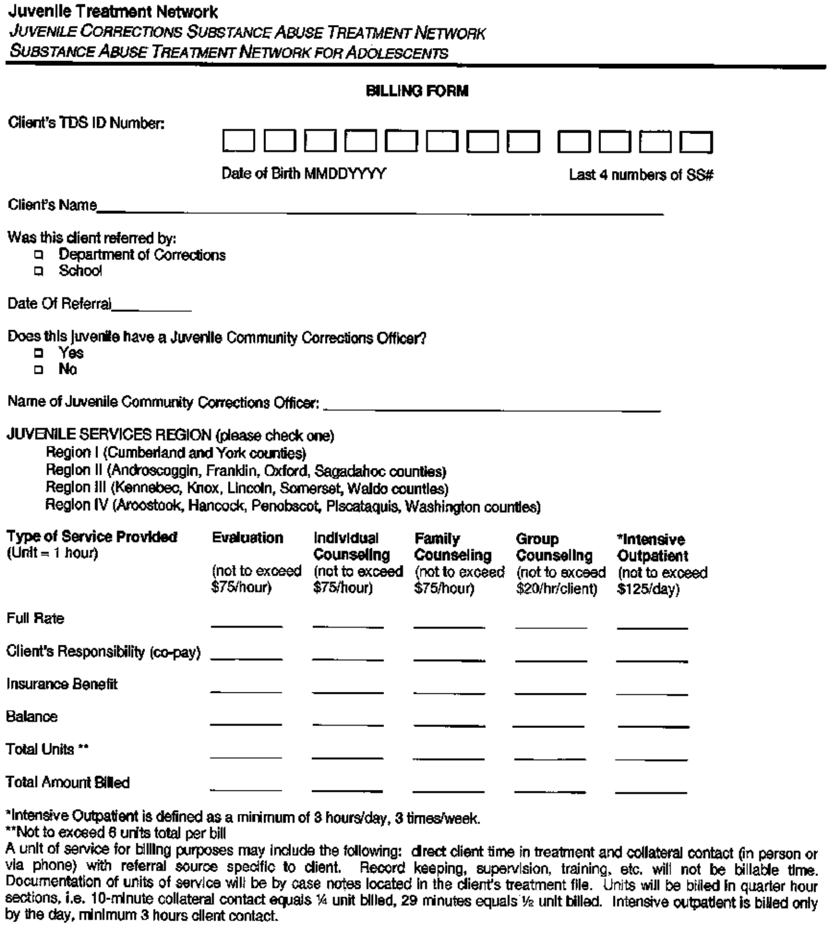
As with transportation costs, the Network funds will cover childcare (up to $10 per treatment session) for adolescents **REGARDLESS OF THE FUNDING SOURCE FOR TREATMENT.**

In order to be eligible for childcare reimbursement from the Network funds, the adolescent must have had a JASAE and the treatment provider is required to complete a TDS admission and discharge form.

The Juvenile Treatment Network provider is responsible for reimbursing the adolescent at the appointment and submitting a Substance Abuse Treatment Network for Adolescents billing form to the Juvenile Treatment Network for the amount.

Please Include the following when submitting for billing:

- (Required) Completed Juvenile Treatment Network Billing Form.
- (Required) Copy of Completed TDS admission Form for client with appropriate Network code-**23021-99.**
- Any relevant supportive documentation for last resort payment source.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

BILLING FORM

Client's TDS ID Number: ☐☐☐☐☐☐☐☐ ☐☐☐☐
Date of Birth MMDDYYYY Last 4 numbers of SS#

Client's Name____

Was this client referred by:
☐ Department of Corrections
☐ School

Date Of Referral__________

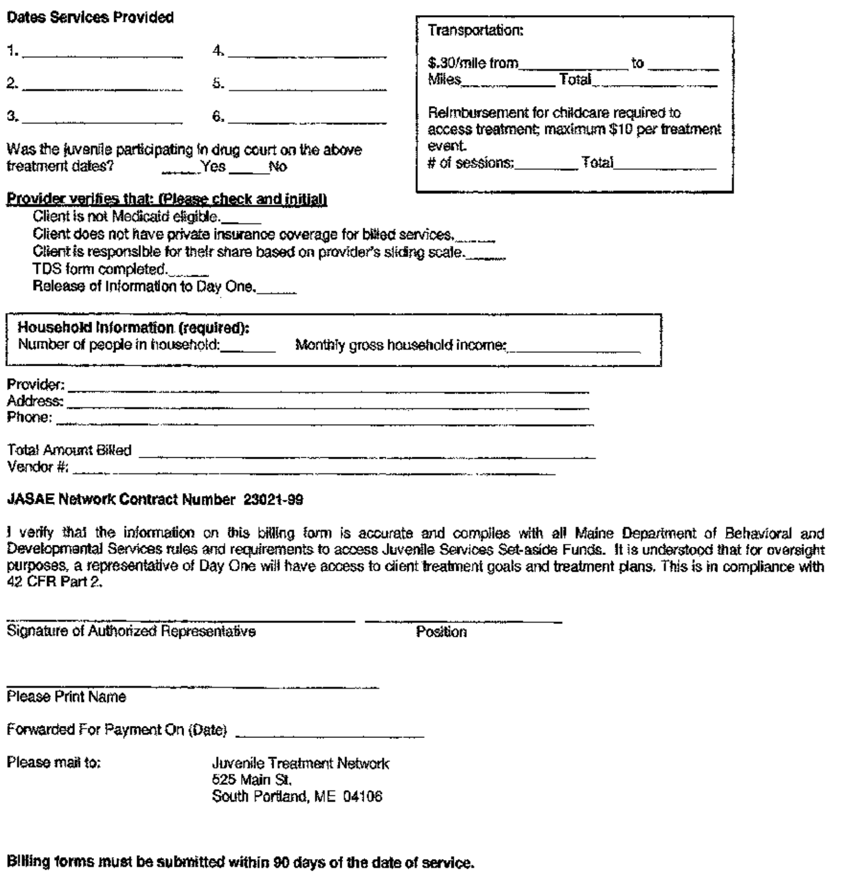
Does this juvenile have a Juvenile Community Corrections Officer?
☐ Yes
☐ No

Name of Juvenile Community Corrections Officer: ______________________________

JUVENILE SERVICES REGION (please check one)
Region I (Cumberland and York counties)
Region II (Androscoggin, Franklin, Oxford, Sagadahoc counties)
Region III (Kennebec, Knox, Lincoln, Somerset, Waldo counties)
Region IV (Aroostook, Hancock, Penobscot, Piscataquis, Washington counties)

Type of Service Provided (Unit = 1 hour)	**Evaluation** (not to exceed $75/hour)	**Individual Counseling** (not to exceed $75/hour)	**Family Counseling** (not to exceed $75/hour)	**Group Counseling** (not to exceed $20/hr/client)	***Intensive Outpatient** (not to exceed $125/day)
Full Rate	______	______	______	______	______
Client's Responsibility (co-pay)	______	______	______	______	______
Insurance Benefit	______	______	______	______	______
Balance	______	______	______	______	______
Total Units **	______	______	______	______	______
Total Amount Billed	______	______	______	______	______

*Intensive Outpatient is defined as a minimum of 3 hours/day, 3 times/week.
**Not to exceed 6 units total per bill
A unit of service for billing purposes may include the following: direct client time in treatment and collateral contact (in person or via phone) with referral source specific to client. Record keeping, supervision, training, etc. will not be billable time. Documentation of units of service will be by case notes located in the client's treatment file. Units will be billed in quarter hour sections, i.e. 10-minute collateral contact equals ¼ unit billed, 29 minutes equals ½ unit billed. Intensive outpatient is billed only by the day, minimum 3 hours client contact.



Dates Services Provided

1. __________ 4. __________
2. __________ 5. __________
3. __________ 6. __________

Was the juvenile participating in drug court on the above treatment dates? _____Yes _____No

Transportation:

$.30/mile from__________ to ________
Miles__________ Total__________

Reimbursement for childcare required to access treatment; maximum $10 per treatment event.
# of sessions:________ Total__________

Provider verifies that: (Please check and initial)

Client is not Medicaid eligible._____
Client does not have private insurance coverage for billed services._____
Client is responsible for their share based on provider's sliding scale._____
TDS form completed._____
Release of Information to Day One._____

Household Information (required):
Number of people in household:______ Monthly gross household income:__________

Provider: __________
Address: __________
Phone: __________

Total Amount Billed __________
Vendor #: __________

JASAE Network Contract Number 23021-99

I verify that the information on this billing form is accurate and complies with all Maine Department of Behavioral and Developmental Services rules and requirements to access Juvenile Services Set-aside Funds. It is understood that for oversight purposes, a representative of Day One will have access to client treatment goals and treatment plans. This is in compliance with 42 CFR Part 2.

__________ __________
Signature of Authorized Representative Position

____
Please Print Name

Forwarded For Payment On (Date) __________

Please mail to:

Juvenile Treatment Network
525 Main St.
South Portland, ME 04106

Billing forms must be submitted within 90 days of the date of service.

JUVENILE TREATMENT NETWORK

TRANSPORTATION LOAN

BILLING POLICIES AND PROCEDURES

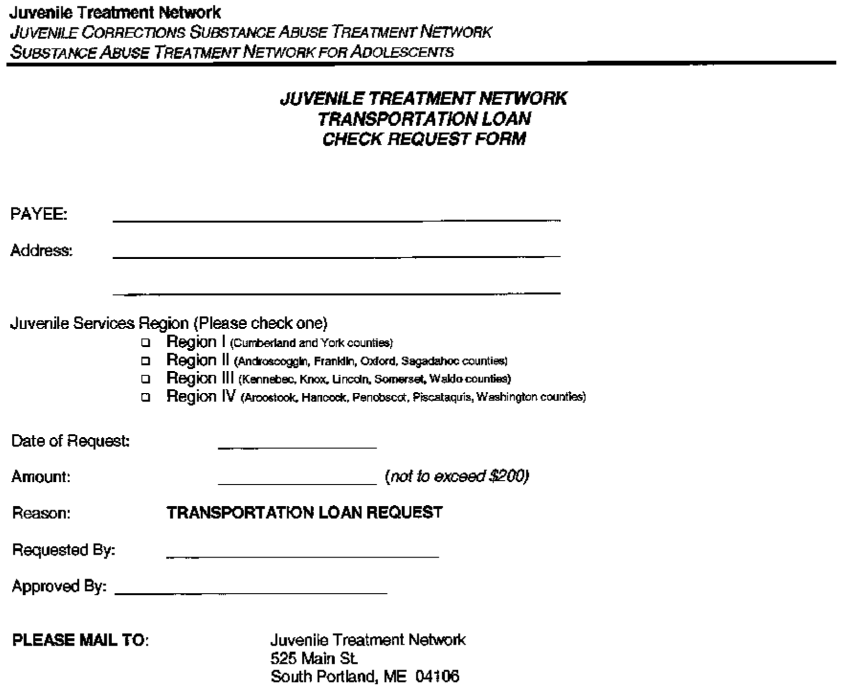
The Juvenile Treatment Network transportation loan is available for providers to access when current Juvenile Treatment Network transportation reimbursement procedures are a barrier to treatment services. Upon submission of a check request form from the Network provider to the Juvenile Treatment Network office, Day One will issue a check to the provider to be used for transportation expenses as they occur for clients eligible for transportation funds. Day One will create a debit account in an amount not to exceed $200 in the provider's name. **THE PROVIDER WILL CONTINUE TO BILL FOR CLIENTS,** using the Transportation Billing Form but instead of receiving payment, the billable amount will be subtracted from the debit account until a zero balance is reached. At that time the provider may request another Transportation loan.

Transportation loan funds may be used to cover transportation costs for juveniles to get to and from treatment appointments. **THIS OPTION IS AVAILABLE REGARDLESS OF THE JUVENILE'S FUNDING SOURCE FOR TREATMENT.** If, in the provider's judgment, transportation is a barrier to treatment, the transportation funds can cover bus or cab fare, or pay mileage ($.30/mile) to the juvenile or friend/family member that drives the juvenile to and from treatment. While the Transportation Loan Funds can cover mileage to and from treatment appointments, it will not cover mileage for a friend or family member to drive back home, or somewhere else, while waiting for the juvenile.

KEEP IN MIND THAT IN ORDER FOR CLIENTS TO BE ELIGIBLE FOR SET-ASIDE FUNDS, THE FOLLOWING CRITERIA MUST BE MET:

- The client must have had a JASAE
- A TDS admission form must be completed for the adolescent

To obtain a Transportation Loan, providers must submit a **Juvenile Treatment Network Transportation Fund Check Request Form** to the Juvenile Treatment Network office at: Juvenile Treatment Network, 525 Main St., South Portland, ME 04106.



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

JUVENILE TREATMENT NETWORK
TRANSPORTATION LOAN
CHECK REQUEST FORM

PAYEE: ______________________________

Address: ______________________________

____

Juvenile Services Region (Please check one)

- ☐ Region I (Cumberland and York counties)
- ☐ Region II (Androscoggin, Franklin, Oxford, Sagadahoc counties)
- ☐ Region III (Kennebec, Knox, Lincoln, Somerset, Waldo counties)
- ☐ Region IV (Aroostook, Hancock, Penobscot, Piscataquis, Washington counties)

Date of Request: ________________

Amount: ________________ *(not to exceed $200)*

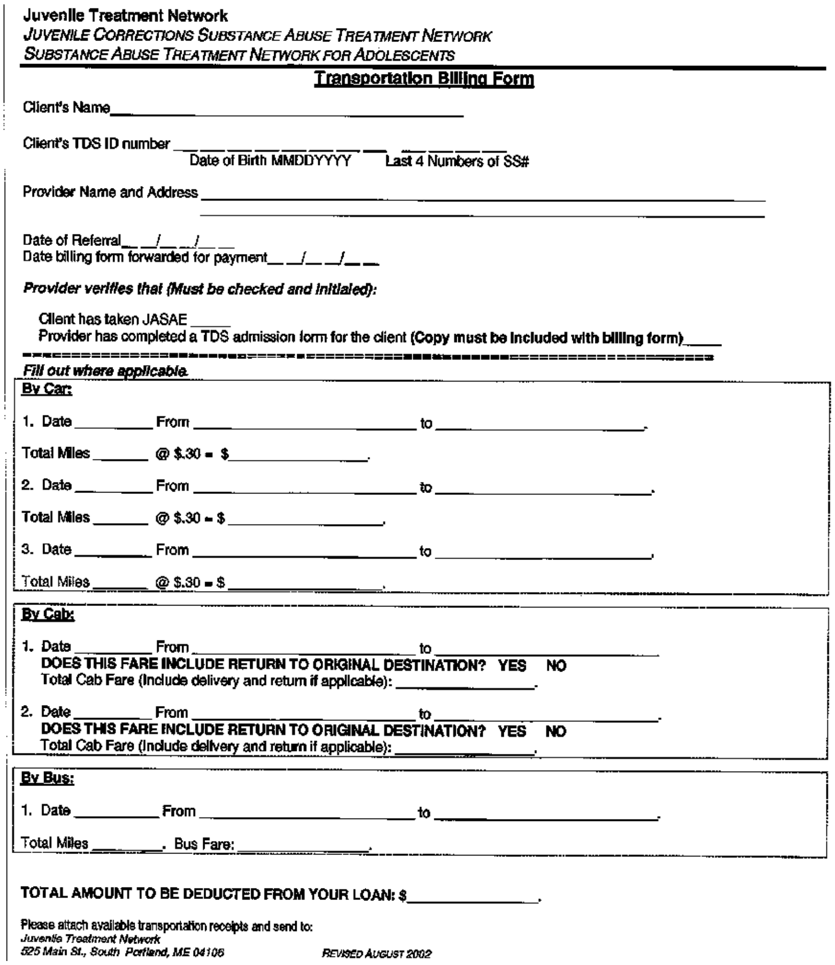
Reason: **TRANSPORTATION LOAN REQUEST**

Requested By: ____________________

Approved By: ____________________

PLEASE MAIL TO:

Juvenile Treatment Network
525 Main St.
South Portland, ME 04106



Juvenile Treatment Network
JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK
SUBSTANCE ABUSE TREATMENT NETWORK FOR ADOLESCENTS

Transportation Billing Form

Client's Name____________________________________

Client's TDS ID number __ __ __ __ __ __ __ __ __ __ __ __
Date of Birth MMDDYYYY Last 4 Numbers of SS#

Provider Name and Address ____

Date of Referral__ __/__ __/__ __
Date billing form forwarded for payment__ __/__ __/__ __

Provider verifies that (Must be checked and initialed):

Client has taken JASAE _____
Provider has completed a TDS admission form for the client **(Copy must be included with billing form)**_____

Fill out where applicable.

By Car:

1. Date __________ From ________________________ to ________________________.

Total Miles _______ @ $.30 = $________________.

2. Date __________ From ________________________ to ________________________.

Total Miles _______ @ $.30 = $________________.

3. Date __________ From ________________________ to ________________________.

Total Miles _______ @ $.30 = $________________.

By Cab:

1. Date __________ From ________________________ to ________________________
DOES THIS FARE INCLUDE RETURN TO ORIGINAL DESTINATION? YES NO
Total Cab Fare (Include delivery and return if applicable): ________________.

2. Date __________ From ________________________ to ________________________.
DOES THIS FARE INCLUDE RETURN TO ORIGINAL DESTINATION? YES NO
Total Cab Fare (Include delivery and return if applicable): ________________.

By Bus:

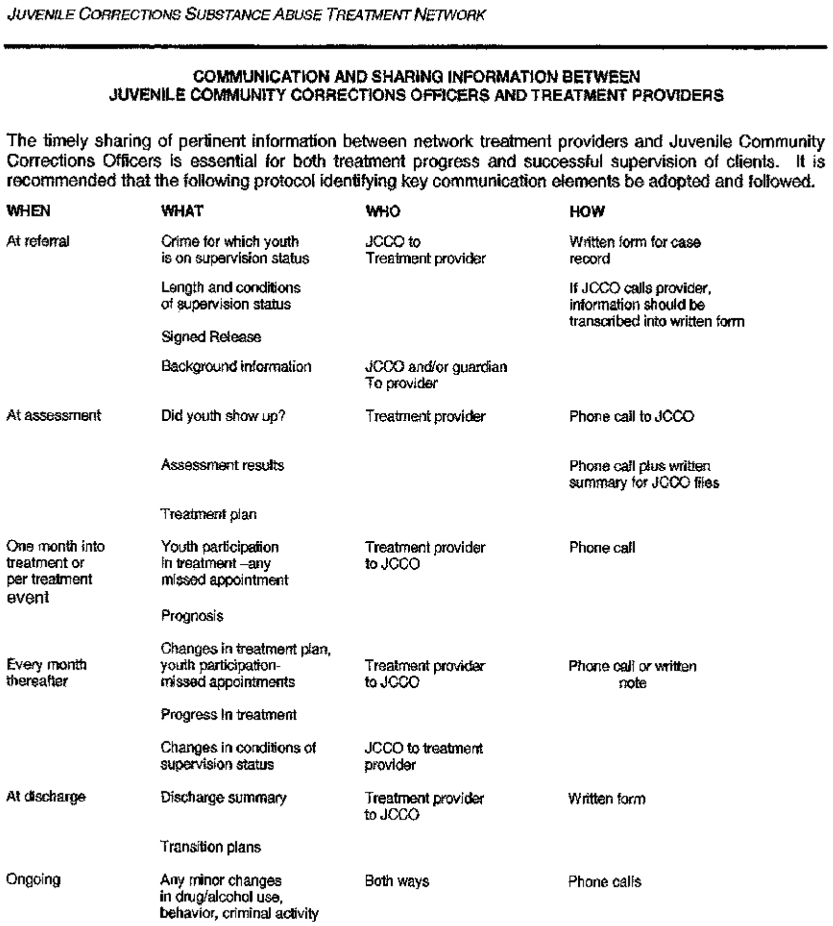
1. Date __________ From ________________________ to ________________________.

Total Miles ________. Bus Fare: ________________.

TOTAL AMOUNT TO BE DEDUCTED FROM YOUR LOAN: $________________.

Please attach available transportation receipts and send to:
Juvenile Treatment Network
525 Main St., South Portland, ME 04106

REVISED AUGUST 2002



JUVENILE CORRECTIONS SUBSTANCE ABUSE TREATMENT NETWORK

COMMUNICATION AND SHARING INFORMATION BETWEEN JUVENILE COMMUNITY CORRECTIONS OFFICERS AND TREATMENT PROVIDERS

The timely sharing of pertinent information between network treatment providers and Juvenile Community Corrections Officers is essential for both treatment progress and successful supervision of clients. It is recommended that the following protocol identifying key communication elements be adopted and followed.

WHEN	WHAT	WHO	HOW
At referral	Crime for which youth is on supervision status	JCCO to Treatment provider	Written form for case record
	Length and conditions of supervision status		If JCCO calls provider, information should be transcribed into written form
	Signed Release		
	Background information	JCCO and/or guardian To provider	
At assessment	Did youth show up?	Treatment provider	Phone call to JCCO
	Assessment results		Phone call plus written summary for JCCO files
	Treatment plan		
One month into treatment or per treatment event	Youth participation in treatment –any missed appointment	Treatment provider to JCCO	Phone call
	Prognosis		
Every month thereafter	Changes in treatment plan, youth participation-missed appointments	Treatment provider to JCCO	Phone call or written note
	Progress in treatment		
	Changes in conditions of supervision status	JCCO to treatment provider	
At discharge	Discharge summary	Treatment provider to JCCO	Written form
	Transition plans		
Ongoing	Any minor changes in drug/alcohol use, behavior, criminal activity	Both ways	Phone calls

CRIMINALS, TROUBLED YOUTH, OR A BIT OF BOTH

MULTIPLE DISORDERS SEEN IN JUVENILE POPULATION PRESENT TREATMENT CHALLENGES

Crime, especially violent crime, is a frequently voiced concern and often a hot political topic during elections. According to Federal statistics, juveniles accounted for 17 percent of all arrests in 2000, and for 16 percent of all violent criminal arrests.[1] Crimes committed by adolescents are particularly troubling since rearrest rates have been found to range from 37 percent to over 50 percent within 2 years[2] and up to 67 percent within 4 to 5 years.[3]

Unfortunately, most of the recidivism reports not only ignore substance use disorders in adolescent populations, they also ignore other co-occurring conditions. Even among the treatment studies, there is a tendency to focus on a single problem or diagnosis. But as Weisz and Hawley[4] point out, ". . .adolescent problems do not come in such neat, one-diagnosis units, but in bundles. . ." According to their literature review, it is not unusual for adolescents in clinical populations to average three or more diagnoses.

Adolescents in the juvenile justice system resemble clinical populations in the elevated prevalence of co-occurring conditions. One general literature review found that about 60 percent of adolescents with a substance use disorder had a co-occurring mental health diagnosis as well.[5] Teplin and colleagues found that, even when conduct disorder is ignored, 60 percent of males and 65 percent of females in juvenile justice populations had one or more diagnoses.[6]

The prevalence of co-occurring conditions appears to apply to minorities as well as whites. For example, a study of American Indian detainees found that more than 20 percent met diagnostic criteria for two or more disorders.[7]

In Maine, Day One is the program responsible for assessing all juveniles committed to the State's two detention centers or entering its various adolescent drug treatment courts. In order to standardize the assessment procedure across all sites, the Practical Adolescent Dual Diagnostic Interview (PADDI), a structured diagnostic interview, is administered to each juvenile. The PADDI covers a number of mental health domains in addition to substance use disorders. It also inquires about suicidal ideation, thoughts of harming others, and victimization (physical, sexual and emotional).

An analysis of the first 218 consecutive admissions (187 males and 31 females) ranging in age from 13 to 18 revealed that almost 90 percent of the cases were between ages 15 and 17. The majority were Caucasian (89 percent), and American Indians (5 percent) constituted the only other group with more than 10 cases. Most came from single-parent homes, with fewer than 20 percent living with both parents.

Educational attainment appeared low for these adolescents. Although almost 75 percent were over the age of 15, 65 percent had not passed beyond the 8th grade in school. Half of the adolescents had been in special classes for behavioral or academic problems, and 15 percent reported reading difficulties that caused serious problems. This is consistent with other reports indicating that while more than 70 percent of delinquent juveniles have some reading or spelling problems, slightly over 10 percent of the problems were considered serious.[8]

When asked about the reason for incarceration or being in adolescent court, most (61 percent) responded that it was due to a nonviolent offense, but 24 percent acknowledged violent offenses. A substantial proportion (43 percent) reported substance abuse as being a factor in their current detention.

Almost three out of four adolescents (73 percent) reported that they had been in trouble for the same problem before. Of those reporting nonviolent offenses, 73 percent reported prior problems, compared to 77 percent for the violent offenders and 85 percent for those indicating a substance use problem. This is consistent with the rates of recidivism in other juvenile samples.[23]

Although they had committed either a criminal or statutory offense, these adolescents were often themselves victims of abuse. More than 75 percent of the females and about half of the males reported physical, sexual and/or emotional abuse. For females, emotional abuse (61 percent) was the most prevalent, followed by sexual abuse (42 percent) and physical abuse (39 percent). For males, physical and emotional abuse were most common (33 percent and 29 percent, respectively), and sexual abuse was least prevalent (11 percent).

Multiple disorders

In addition to the prevalence of victimization, the pattern of diagnostic disorders in this population is staggering. More than 90 percent appear to meet at least minimal criteria for a mental health or substance use disorder, and 80 percent meet such criteria convincingly. Of the five most prevalent conditions (substance use disorder, conduct disorder, oppositional defiant disorder, major depressive episode, and manic episode), 75 percent appear to meet diagnostic criteria for more than one of these conditions.

Of the adolescents in this juvenile sample, 80 percent met criteria for conduct disorder and 71 percent met criteria for substance dependence. An additional 14 percent meet criteria for substance abuse only, so that a total of 85 percent appear to meet criteria for a substance use disorder. Because substance dependence is the more severe and chronic condition,[9] we chose to focus on this condition rather than including abuse, or misuse.

There are two notable differences in the severity indications between substance dependence and conduct disorder. The first is that if both abuse and dependence are considered, substance use disorders would be the most prevalent conditions. Secondly, when the extent of diagnostic indicators is examined, 65 percent of the entire sample reported events and behaviors that exceeded the minimal criteria for substance dependence. In contrast, 35 percent of the sample met only minimal criteria for conduct disorder and 45 percent substantially exceeded the minimal criteria for this condition. Furthermore, it is probable that some of the apparent conduct disorder behaviors were a consequence of substance dependence rather than an independent co-occurring condition.

For major depression and mania, the PADDI attempts to identify those episodes that are related to substance use. This identified 7 percent of the sample as having apparent substance-induced episodes. When these cases are excluded, almost 30 percent of the youths provide indications of a major depressive episode and about one in four reports symptoms consistent with a manic episode.

Approximately 13 percent meet at least minimal DSM-IV criteria for both depression and mania, and about half of those clearly exceed minimal criteria for both conditions. These findings highlight the possibility of emerging bipolar conditions among a substantial minority of delinquent adolescents.

Indications of anxiety disorders are also common. Given the victimization histories, it is not surprising that more than 20 percent of the youths indicate symptoms compatible with post-traumatic stress disorder (PTSD). Almost one-fourth of the cases endorsed more than half of the symptoms for generalized anxiety or phobias. Approximately 10 percent reported panic attacks and associated physiological experiences compatible with a panic disorder.

Because of the varied presentation for anxiety disorders and the need to carefully rule out other possible causes, these prevalences should be considered tentative. However, the level of reported symptoms does suggest that a substantial portion of these youths may suffer from a range of anxiety disorders.

Treatment Recommendations

The results of this study point toward strong indications that a majority of adolescents entering juvenile justice systems merit mental health and/or substance abuse treatment services.

More than half of the adolescents in this cohort report positive indications for at least five of the seven dependence criteria, and 36 percent exceed diagnostic criteria for a mental health condition other than conduct disorder or oppositional defiant disorder. Even if we were to assume that half of the mental health conditions were substance-induced beyond those already identified as such, we would still be left with a substantial proportion of adolescents with serious mental health conditions that are likely to require attention.

In addition to conduct disorder, substance dependence and conditions such as bipolar disorder are likely to be related to recidivism. Therefore, failure to identify and treat these mental health and substance use problems is likely to further contribute to the recidivism issue. However, caution should be exercised when considering treatment options or other solutions, as the politically popular boot camps for juvenile offenders have often yielded disappointing outcomes and, in one case, higher-than-expected recidivism.[10]

The findings from this systematic assessment of consecutive admissions to the Maine juvenile justice system provide support for several recommendations. First, and most obvious, routine assessments and not simply perfunctory screening should be undertaken with all new cases entering the juvenile justice system. This would include admissions to detention centers and cases considered for diversion courts. The present study has shown that such initial assessments can be conducted in less than an hour using a structured interview process.

The second recommendation involves the allocation of resources for treatment in order to address the identified conditions. Treatment services should be available not only in the juvenile institutions but also in the community upon release to adequately address both chronic and acute conditions. To the extent that such services reduce recidivism, they are likely to pay for themselves in overall cost savings. The costs for incarcerating a juvenile for a year have been estimated to range from $34,000 to $64,000.[11] Thus, if treatment can reduce recidivism for a portion of cases, it may more than pay for itself.

Finally, due to the prevalent academic problems in juvenile populations, remedial educational services and vocational counseling are necessary investments to facilitate the path toward productive citizenship instead of career recidivism in the adult correctional system. ■

Norman G. Hoffmann is president of Evince Clinical Assessments and clinical associate professor of community health at Brown University. Ana M. Abrantes is a post-doctoral fellow at Brown University's Center for Alcohol and Addiction Studies. Ronald Anton is director of juvenile justice and community programs at Day One for Youth and Families, in Maine.

Hoffmann may be contacted at Evince Clinical Assessments, P.O. Box 17305, Smithfield, RI 02917; phone (401) 231-2993; fax (401) 231-2055; e-mail evinceassessment@aol.com. For more information, visit www.evinceassessment. com.

References

[1] Snyder, H.N. (2002). Juvenile Arrests 2000. Juvenile Justice Bulletin, NCJ 191729, Washington, DC: OJJDP, U.S. Department of Justice.

[2] Blechman, E.A., Maurice, A., Buecker, B., & Helberg, C. (2000). Can mentoring or skill training reduce recidivism? Observational study with propensity analysis. Prev Sci, 1(3), 139-155.

[3] Steiner, H., Cauffman, E., & Duxbury, E. (1999). Personality traits in juvenile delinquents: relation to criminal behavior and recidivism. Journal of the American Academy of Child and Adolescent Psychiatry, 38(3), 256-262.

[4] Weisz, J.R. & Hawley, K.M. (2002). Developmental factors in the treatment of adolescents. Journal of Consulting and Clinical Psychology, 70(1), 21-43.

[5] Armstrong, T.D., Costello, E.J. (2002). Community studies on adolescent substance use, abuse, or dependence and psychiatric comorbidity. Journal of Consulting and Clinical Psychology, 70, 1224-1239.

[6] Teplin, L.A., Abram, K.M., McClelland, G.M., Dulcan, M.K., & Mericle, A.A. (2002). Psychiatric disorders in youth in juvenile detention. Archives of General Psychiatry, 59(12) , 1133-1143.

[7] Duclos, C.W., Beals, J., Novins, D.K., Martin, C., Jewett, C.S., & Manson, S.M. (1998). Prevalence of common psychiatric disorders among American Indian adolescent detainees. Journal of the American Academy of Child and Adolescent Psychiatry, 37(8), 866-873.

[8] Svensson, I., Lundberg, I., & Jacobson, C. (2001). The prevalence of reading and spelling difficulties among inmates of institutions for compulsory care of juvenile delinquents. Dyslexia, 7(2) , 62-76.

[9] Hoffmann, N.G. (2003). Distinguishing "Dependence" from "Abuse." Addiction Professional, 1(2) , 19-21.

[10] Greenwood, P.W. (1996). Responding to juvenile crime: Lessons learned. Future Child, 6(3), 75-85.

[11] Kumpfer, K.L., Alexander, J.F., McDonald, L., & Olds, D.L. (1998). Family-focused substance abuse prevention: What has been learned from other fields. In Drug Abuse Prevention Through Family Intervention (NIDA Research Monograph 177, pp. 78-102). Washington, DC: NIDA.

Senator DEWINE. Thank you very much.

Mr. Shipley?

Mr. SHIPLEY. Thank you. Chairman DeWine, Senator Reed, distinguished Members of the Substance Abuse and Mental Health Services Subcommittee, thank you for holding this hearing.

There is no greater issue impacting families in America today than teenage drug use and abuse. I am here today before you as a client of the Second Genesis Residential Treatment Program. My name is Kris Shipley. I am 28 years old and began my use of alcohol and drugs at the age of 11. I appear before you proud today that I have been clean for 4 years; am gainfully employed as an administrative assistant, but every day is a challenge.

I have a 7-year-old son, and I pray every night that I can give him the necessary tools and mentoring to stay drug free and not follow in the footsteps of myself or those of his grandfather. My recovery is part of my child's prevention.

I began my substance abuse drinking beer and moved to hard liquor when I was 12. My substance abuse escalated when I got my driver's license and could spend time roaming the streets. I graduated to harder drugs, including marijuana, cocaine, ecstasy and PCP. I unfortunately fell between the cracks and weaved in and out of the juvenile criminal justice system, bouncing between my parents' home and living on my own.

My parents were divorced, middle-class and skilled employees. My father loved to party, which included drug use. Often, when I stayed at his house, he would return from a night of partying and wake me up to join him and his friends in the living room to continue the party. His house became a haven for my friends and me to use and abuse drugs. My only goal was to party with him, with my friends, and to get high with whatever was available.

My mother enabled my use and was helpless to intervene with my behaviors. When I started getting into trouble, she took me to family therapy and one-on-one counseling sessions, but nothing worked. At age 16, I quit school. I got to the point where no one could intervene, because I was completely engulfed in this lifestyle. Nothing was more important than getting high, hurting people and selling drugs. I got comfortable with my negative behaviors. It became a way of life.

As an adult, I weaved through the court system many times until I got caught and sentenced to a 20-year sentence in prison. The treatment program that I am in is a residential program that predominantly serves individuals who are in the criminal justice system. I came to Second Genesis from prison. After serving 3 years of my sentence, I was sent to Second Genesis in the fourth year of my sentence. Sixteen years of my sentence will be suspended when I successfully complete treatment.

I have been very motivated to change after realizing what my losses have been and could be. I have since found out that Second Genesis also runs an adolescent program, but I was not lucky enough as a youth to have been mandated to that level of treatment and care during those years.

I am committed to helping at risk adolescents because I know what they are going through. As part of Second Genesis' education and community prevention outreach program, residents are asked to speak to kids in local schools. Because of our history from living in the lifestyle and progressing through treatment, we can easily identify those kids that are potentially at risk. These are the same kids that an untrained eye will not identify until it is too late. We try hard to reach these kids and deter the larger group.

The more I give these high school testimonies, the more I realize it cannot just be a one-time effort, but efforts must be available to students constantly and continuously. Youth feel invincible and think that what has happened to me could never happen to them. I tell them differently. To this day, the damage to my body and mind is irreversible, and the most evident damage is my short-term memory loss due to my excessive use of ecstasy.

But I am still lucky that I am living to tell my story. I did not die from my substance abuse habit. I could have overdosed, committed suicide, been in an accident while driving, or even worse, killed an innocent bystander.

I know most people wonder what could my school, family or I have done differently to intervene and stop my downward cycle. That is a difficult question. My best advice to you is to please keep funding substance abuse treatment and educational programs. Drug education for America's youth should start at a young age. Intervention should come early in an adolescent's life, whether through prevention or mandated treatment.

It is also important that education, prevention and treatment services are provided both to adolescents and their parents. I know everything in policy is based on statistics, so you should be aware that the University of Maryland conducted a study on the Second Genesis program and found that 79 percent of clients that completed residential treatment while continuing care remained drug free. Fewer than 10 percent were arrested after 6 months.

We all must share the success of treatment and let communities and individuals know that treatment works. Other prevention programs can help youth from starting or sustaining a lifestyle of drug use, programs including outreach and education in the schools, community-based programs, peer counseling, tutoring and mentoring programs.

We must focus on an adolescent's strengths to facilitate healing. We come into treatment at all levels of ability to be open to treatment. Adolescents need more than one-on-one and family counseling. For treatment to work, you need to improve major life domains for clients while they are in treatment. Treatment supports and helps clients achieve permanent sobriety.

The goal is to support adolescents to develop necessary skills and confidence to be drug free. Kids need structure and support to develop their personal growth necessary to stay drug free and for lasting recovery. The therapeutic community treatment model is created to provide treatment services that adapt to the individual's needs. These services include assessment and treatment planning, therapeutic drug testing, health education and intervention, family education and counseling, parenting skills and family support groups, individual and group counseling for adolescents, vocational counseling, recreational programs, anger management, social skills building, educational programs and services, relapse prevention, transitional services and continuing care and followup.

The components of an adolescent program must address the developmental issues of an adolescent and be holistic in approach. I thank you for your interest and commitment. Your job is not an easy one; your leadership is desperately needed. Never give up on trying to keep America's youth free from substance abuse through prevention and treatment. I am a living testament that your leadership has helped me to remain in recovery, and hopefully, we can empower youth like my son and generations to come not to start a life of drug abuse.

[The prepared statement of Mr. Shipley follows:]

PREPARED STATEMENT OF KRIS SHIPLEY

Introduction

Chairman DeWine and distinguished Members of the Substance Abuse and Mental Health Services Subcommittee, Senate Committee on Health, Education, Labor and Pensions, thank you for holding the hearing "Providing Substance Abuse Prevention and Treatment Services to Adolescents." I am here today before you as a client of the Second Genesis Residential Treatment Program. My name is Kris Shipley. I am a 28-year old parent and began using alcohol and drugs at age 11.

Second Genesis is a nonprofit drug and alcohol rehabilitation program with residential and outpatient centers in Maryland, Virginia, and Washington, DC. Second Genesis is a member of Therapeutic Communities of America, a nonprofit membership association that represents over 500 therapeutic community programs throughout the United States. TCA members are predominately funded through public funds.

Second Genesis, is a therapeutic community, designed to help individuals empower themselves and to lead healthy, responsible drug free lives. Treatment is holistic in nature and incorporates not only treatment for individuals' addictions but also understands the importance of habilitation. It includes vocational services, educational services, social skill building, relapse prevention, family services, transitional living services and continuing care to help transition an individual back into their community.

I have been drug free for 4 years and I am now gainfully employed as an administrative assistant but every day is challenging. I will forever live with the possibility that I will use again. My 7-year-old son lives with me. I appreciate the committee's commitment to helping future generations of Americans not to abuse drugs and alcohol. I pray every night that I can give my son the necessary tools and mentoring to stay drug free and not follow in my footsteps. With my sobriety, I hope that my son has a better chance than I was given, and I hope to see a day when all adolescents have access to substance abuse prevention and treatment services. One of the most difficult problems facing American families today is teen drug use. The most important action you can take is to help parents know where to turn when their kids are at risk of using by making prevention and treatment services readily available.

Journey to Recovery

I am going through a residential treatment program that predominately serves individuals who are in the criminal justice system. I came to Second Genesis from prison. I had served 3 years of my jail term and was sent to this community residential substance abuse treatment for the 4th year of my 20-year sentence. As a condition of successfully completing treatment, the remaining 16 years, will be suspended. For the first time, I was motivated for treatment when I entered the program.

I began using drugs when I was 11 years old. My parents are divorced, middle class skilled employees. I started my substance abuse drinking beer and progressed to harder drugs including marijuana, cocaine, ecstasy, and PCP. Due to my drug use I have significant short-term memory loss that has been directly related to my extensive use of ecstasy.

But I am still here to tell my story. A significant number of adolescent drug abusers loose their lives to overdose, suicide or motor vehicle fatalities, to name a few.

Second Genesis also runs an adolescent program, but I was not lucky enough in my youth to have been mandated to that level of care. My drug abuse has cost me, my family and society immeasurable amounts of heartache and money. I unfortunately fell between the cracks and weaved in and out of the criminal justice system bouncing between my parent's homes, and quitting school at the age of 16. I had one parent who liked to party and another parent that enabled my use and seemed unable to intervene with my behaviors.

I started drinking hard liquor when I was 12, but my substance abuse escalated when I got my driver's license and I could spend time "roaming". My goal was to party with my friends. I used to take my friends to my dad's house, which allowed us an environment to abuse drugs. My dad also liked to party, that included drug use. Often times when I stayed over at my dad's place, he would get home from partying with his friends and wake me to join them in the living room to continue the party.

My mother took me to family and individual counseling when I started getting in trouble with the law but no one directly intervened with my drug use. In the 10th grade, my mother sent me to a private school because I was having fights in public school. I dropped out of that school after one quarter. I got to a point where no one could intervene because I was completely engulfed in this lifestyle. Nothing was more important than getting high, hurting someone, and selling drugs. Nothing was more important than my drugs and my life style. As an adolescent you violate your values in stages and you get more and more comfortable with negative behaviors. My mother would buy me cars and tell me that I had to pay for them, but I would wreck them when I was high and she would replace the car without any consequence. I went through 11 cars from 16—21 years of age.

I went through the juvenile court system 5 times for such offenses as assault and served time on 3 of those occasions but I was never mandated to treatment. At 17 I was arrested running in the streets in my boxer shorts with a meat cleaver in my hand, high out of my mind on PCP, ready to assault anyone. I thank the police officers that subdued me for sparing my life and not shooting me. I lived independently in my own apartment and had lots of money from drug sales. I had several arrests after that until at 24, I was sent to prison and then sent to long-term residential care for the 4th year of my jail sentence.

Giving Back

As part of a Second Genesis prevention outreach program, I and other residents go to local high schools and speak with students in their classrooms about drug use and abuse. We help them identify options for help and try to deter other kids from even beginning to use drugs.

Months after visiting a local high school we returned to speak once again, we were amazed at the number of kids from the previous session that asked to participate in the second session. The more I give these testimonies, the more I realize it cannot just be a one time effort but our efforts must be available to students on a continuous basis. Drug use is a disease of denial and stigma and we must give adolescents an avenue to make informed decisions so they do not use or abuse drugs. Kids feel invincible and believe that what has happened to me could never happen to them. I tell them differently. Peer counseling and mentoring must be important services of any prevention program.

When we speak to kids in school, we can easily spot those kids that are already at risk. Because of our histories we can identify them through body language and other identifying markers that a "blind eye" cannot. These are the same students who are at risk of falling between the cracks and being identified too late. Within our schools and the community, there should be avenues available to every at risk child, and options to reach out to that child's positive behaviors to steer them away from drugs. Adolescent drug use is inevitably a downward cycle. There is no such thing as a safe drug. A parent allowing a child to drink instead of using illegal drugs is signing that child a blank check to abuse.

I know you are wondering what my school, my family or I could have done to stop my future cycle of drug abuse when I was 11 years old. This is a difficult question. I watched some kids in my school experiment with drugs and never become addicted, yet many of us who used drugs seemed to cross over that invisible line to enormous consequences. It is difficult for adolescents to comprehend that they may have to face the ultimate consequence "death".

Observations and Recommendations

My best advice to you is do not give up on prevention and treatment services for adolescents. Please keep funding treatment and prevention programs. If you save just one life from drug use, you have taken responsible actions for both the adolescent and society.

It is important that prevention and treatment services are provided to both the adolescent and their parents. I am scared that my son will not listen to me. He may already be damaged from the first 7 years of his life. He and I together need services so I can continue my recovery and he can make healthy choices, and not follow the role model that he knew in his formative years. Kids from homes where there is drug use are at a high risk of using. Public funds need to be spent on both adult and adolescent treatment and prevention services. My treatment is part of my child's prevention.

Drug education to America's youth must be continuous and constant and it should start with children at a very young age. High school is too late. It is important to ask questions and listen to what they are saying. Once an adolescent crosses that line to the drug life style they become hardened and only severe intervention might get their attention. Intervention should come early in an adolescent's life, whether through prevention or mandated treatment.

Treatment works and society knows that it works but the stigma against substance abuse is more powerful than common sense. A University of Maryland study found that 79 percent of clients who completed Second Genesis programs with continuing care remained drug free. In addition, fewer than 10 percent were arrested after 6 months. As Americans we must stop being cynical about treatment's success and let our communities and individuals know that treatment works.

Prevention services are also important and might include talks like the ones I conduct in local high schools. It is important to reach out and educate youth about their options with the hope that the information helps them make healthy decisions. Outreach and education in the schools and community based programs, peer counseling, tutor and mentoring programs can all help to prevent a youth from starting or sustaining a lifestyle of drug use.

Adolescents must be placed in the most appropriate care for the severity of their illness and their treatment should be client based. When treating the adolescent, you need more than simply one-to-one and family counseling. You need to provide the appropriate level of treatment for each client. You must improve major life domains for clients while they are in treatment, help the client develop healthy lifestyles, and help the client achieve permanent sobriety.

We must focus on an adolescent's strengths to facilitate healing. Whether it is through a structured after-school program specifically designed to for outreach to high-risk children or a residential adolescent treatment program, the goal is to support adolescents to develop necessary skills and confidence to be drug free. Kids need structure and support to develop the personal growth necessary for recovery.

The model of therapeutic community treatment adapts to the special needs of adolescents. Treatment services offered include: assessment and treatment planning, therapeutic drug testing, health education and intervention, family education and counseling, parenting skills and family support groups, individual and group counseling for the adolescent, vocational counseling, recreational programs, anger management, social skills building, educational programs, relapse prevention, transitional services, continuing care and follow-up. The components of an adolescent program must address the developmental issues of an adolescent and be holistic in approach.

I thank you for your interest and commitment. Your job is not easy as you use your leadership to empower Americans to make choices, which enable them to be alcohol and drug free and to lead responsible healthy productive lives. With your help, as an individual, I can remain in recovery and empower my son not to start a life of drug use. You can help by never giving up on trying to sustain an America that is free from substance abuse by recognizing the importance of treatment and prevention services. If you would like specifics on adolescent programs across the United States, Therapeutic Communities of America and/or Second Genesis, would be glad to supply you with that information.

Senator DEWINE. Mr. Shipley, what was the—first of all, let me thank you very much for your testimony and for being here today. We appreciate it very, very much. What, if there was one turning point for you, what was the turning point?

Mr. SHIPLEY. For me?

Senator DEWINE. For you. Yes, was it when you went to prison or jail? Or what was the turning point for you?

Mr. SHIPLEY. For me it was prison.

Senator DEWINE. OK.

Mr. SHIPLEY. That is what it took for me.

Senator DEWINE. And then, that was pretty much it, and then, what happened then? Did you get the treatment in prison, or was the condition that if you got treatment, they would suspend the rest of it? Is that——

Mr. SHIPLEY [CONTINUING]. For me, prison was—I lost everything in prison. There were no phone calls; there were no family visits; there were no—there was nothing. That is when I actually sat by myself without any drugs, without any alcohol, without any anything; had to deal with all of the emotions and thoughts and everything that came along with life and realized that there was not any treatment available other than just a 12-step program.

At that point, I was not open for that. It actually took for me to sit and be without everything to realize that this was not the way I wanted to live my life.

Senator DEWINE. Ms. Ramsey-Molina, you have put together a very good program in Cincinnati. It has gotten a lot of attention. I have followed it, and we are very proud of what you all have been able to do. For other communities that would like to replicate that, what advice would you give to them?

Ms. RAMSEY-MOLINA. Convene the stakeholders. In the process of convening the stakeholders, really ensuring that you have broad representation of the community; some of those folks even that we consider to be strangers to prevention or strangers to the field, make sure that they are at the table. A skilled convener, influential leader is very important. And then, my other piece of advice would be make sure that the work of the coalition is data-driven.

So many times, we do things in communities, schools, neighborhoods because it looks good, feels good, those sorts of things, but does not really meet the needs of the community. When a community member, regardless of who they are, comes to a table, knows what they are doing is data-based and can be measured, the success can be measured over time, they are far more motivated to stay involved.

So convene the stakeholders carefully and comprehensively for the community and make sure that your efforts are data-driven.

Senator DEWINE. OK; good.

Senator Reed?

Senator REED. Thank you very much, Mr. Chairman, and I thank Mr. Shipley for a very compelling and candid response to Senator DeWine's question; that was my question also.

Mr. Anton, congratulations to you and to Maine, because you have a higher record of success compared to the rest of the Nation, and you have also created a statewide program. Let me ask some questions, some of which are the ones I addressed to Mr. Curie. First on, the issue of vouchers, to what extent do vouchers result in decreased funding for other substance abuse programs?

Mr. ANTON. In the current system, after the CSAT Treatment Capacity Expansion Grant ended, the State found that the program was so successful that they fully supported its continuation and expanded it beyond its initial scope. Initially, we did business with a juvenile correction substance abuse treatment network that identified adolescents in the juvenile justice system that needed services. We have since been able to expand that to schools and communities across the State, so that we are trying to access places where kids are and where this resource can be made available.

We have not fully developed that piece yet because it is only 2 years old, but we are really looking to move in that direction. So the State is supportive, and they fund us through a variety of the mechanisms they have available.

Senator REED. Let me return to the question I posed to Mr. Curie: who is actually making the choices of provider, the vendor, the client or the social worker?

Mr. ANTON. Generally, it's a collaboration between the client, the adolescent, their family member and the people helping them with the screening process. Obviously, the adolescent and the family do not necessarily know everything there is to know about all of the treatment providers, so we provide them information about who is available in their geographical area, what their specialties are.

We allow them to make the choice, however. The treatment providers do not make that choice. They provide information; they provide resources, but the choice is really up to the adolescent and their family. Our family program helps to facilitate that. We make family contact through our network with over 80 percent of the families of the adolescents who take the screening instrument.

Senator REED. And a final question, Mr. Anton. You pointed out in your testimony that all of these providers are certified by the State of Maine.

Mr. ANTON. Yes, they are.

Senator REED. And they meet high standards and——

Mr. ANTON. They meet all of the licensing requirements that the State has in place.

Senator REED [CONTINUING]. Very good. Thank you. Ms. Ramsey-Molina, thank you, and congratulations on your success in Cincinnati. It speaks well of your, our efforts, and Mr. Portman's efforts in getting this program off the ground.

This is sort of a mundane question, but how are you funded? I mean, that is usually the major issue for any coalition of community activists.

Ms. RAMSEY-MOLINA. We are funded—we are actually gifted within Greater Cincinnati; about 50 percent of our budget is local dollars; local foundations, corporate donations and individual donations. The other 50 percent comes from local, State and Federal dollars.

Senator REED. And the governance of the coalition, do you have a board of citizens that represents all of the stakeholders?

Ms. RAMSEY-MOLINA. Yes, we do. We have a Board of Directors, it is actually a 40-member board of directors that oversees the activities of the coalition. It was actively headed by Congressman Ron Portman since its inception in 1996. In July of last year, he stepped down as active chair; still comes to all the meetings; cannot quite take himself away. But we have a new chairman who is senior market researcher with Procter and Gamble. The membership of the board includes the faith community, the business community, the schools, parents, youth, media, a broad representation.

Senator REED. And this is a question I think Senator DeWine posed, so I will pose it slightly differently. What other cities or communities in Ohio or elsewhere have replicated your approach?

Ms. RAMSEY-MOLINA. Well, one of our goals within—we have a 10-county service region. It is 10 counties in Ohio, Indiana and Kentucky. And we work with individual neighborhoods and communities to replicate what we do on the regional level within their local neighborhood, and we have been able to build 31 neighborhood community-based anti-drug coalitions. They have replicated the process, the same kind of planning and convening process, and we see greater reduction in those neighborhoods than we do in similar comparison neighborhoods where coalitions do not exist.

Senator REED. Are these neighborhoods in Cincinnati, statewide or regional?

Ms. RAMSEY-MOLINA. We work with these 31 within our region, within our 10 counties.

Senator REED. Thank you.

Dr. Weissberg, Senator Kennedy asked me to pose two questions of you. In your testimony, you point out that many schools do not use programs of proven effectiveness. Which programs are you referring to, and why are they still being used if they are not effective?

Mr. WEISSBERG. Well, there would be a variety of home grown programs that do not have effectiveness. I think over time, DARE has become less-used now in schools because of some of the work there, but more importantly, there are well-intentioned efforts going on that do not make use of well-evaluated programs that have demonstrated impact.

Senator REED. You suggest by your answer and also by your statement of the need for accountability systems that will evaluate these programs. We also broached that subject with Mr. Curie in terms of his performance parameters. Can you speak for a moment about the accountability systems and what has to be done in this area?

Mr. WEISSBERG. There are two types of accountability systems right now that we are bringing together researchers and educators and policy makers to develop. One has to do with practice assessment: are you implementing high-quality programming? And are you structured in ways to support the programming through staff development of teachers, through effective outreach and things like that? The other accountability system would be on student outcomes, and there, there can be a variety of things ranging from health behaviors to connection of kids to schools. There may be behavior ratings that teachers or parents also can be providing with the system.

Senator REED. Thank you, Dr. Weissberg.

Dr. Brown, again, thank you for your testimony. With regard to research, one of its uses is to help form a strategy. So, based on your research and your colleagues' research, what should be the strategy to deal with this problem? Is the Federal Government employing the right strategy? I realize this is a pretty broad question, but your comments would be appreciated.

Ms. BROWN. You saved the biggest question for me. Actually, I have been really impressed with Committee Members and the speakers who have been here who have represented a diversity of approaches, which is what really needs to happen for prevention and for intervention.

I think everyone here has advocated that alcohol and drug problems for youth are a developmental problem, and so, because of that, we need to have a diversity of approaches. What might work in one community might not work in another community, but there needs to be a diversity of options.

Consistent with the Institute of Medicine's perspective on early prevention, universal, targeted and indicated prevention efforts, it is really critical that youth have a choice in the types of prevention or intervention opportunities that they engage in and that there be sufficient diversity across settings; that we will not have situations where individuals, where it is clear that there is a problem, but we will have missed them in one system; we could pick them up in another.

And so, I guess I am saying to you yes, it is really critical that small organizations, families, businesses, communities are involved. It is critical that there is involvement at the State level, and of course, the Federal involvement is essential. This would not be possible without that.

Senator REED. May I pose one more question Mr. Chairman?

Senator DEWINE. Oh, yes.

Senator REED. This question is open to the entire panel. What I have taken from our disscusion this morning is that we are discovering—that substance abuse is in many ways a developmental problem. Its onset is very early; that usually, young people sort of stumble into the system of help and care when they have an obvious problem.

Which begs the question, of whether or not there should be some screening of children for these predispositions, if it is urgent to treat youngsters very young. Is that something that is being considered at all?

Mr. Anton, you are the——

Mr. ANTON [CONTINUING]. We have an ability through our process to look at children as young as 12.

Senator DEWINE. But they present themselves to the system.

Mr. ANTON. Well, they do in some fashion. Now, to the system could be through the schools; through guidance; through day care; through, I mean, you know, through wherever they happen to be within family situations or in public situations where they present with problems or issues. So yes, that has to happen first.

Unless we see something publicly that leads us to believe there is something going on—there is no—at least in our State, there is no universal screening right now that looks at every child at a very young age to see if they are predisposed. I am not sure if we have all the tools to do that.

Senator REED. I think that is a fair response.

Ms. BROWN. I would like to also make a——

Senator DEWINE. Dr. Brown?

Ms. BROWN [CONTINUING].——comment about that.

I think that there are some natural venues in which screening can unfold; for example, in primary care medicine. Pediatricians are taught to look for these kinds of problems in late adolescence, but they are not necessarily focusing on this sort of thing in the age range where the youth of greatest risk would obviously present themselves.

If kids are starting to use at 11, we need to be sure that pediatricians are asking these questions long before that, so it becomes routine. So there are some natural settings.

Senator REED. That is a good point, Dr. Brown.

Dr. BROWN. Yes.

Senator REED. Dr. Weissberg?

Mr. WEISSBERG. I think the key argument that all of us would make is that if you want to have adolescent prevention of substance abuse, you have to begin much earlier. And there is screening that I think can go on that you can identify very early on who is at risk for substance abuse, but you would not necessarily target it to a narrow substance abuse screening instrument, that maybe children who are overly aggressive, who are overly active in school, who have poor peer relations, who are poorly motivated to achieve.

So there are a number of markers that I think you can use to identify children who may be at risk and in a general way, also, the strategy of promoting positive behavior and connection in kids early on from the start is something that should be happening to prevent substance abuse later on.

Senator REED. Thank you.

Ms. Ramsey-Molina, if you have a comment.

Ms. RAMSEY-MOLINA. To echo some of the kind of naturally-occurring opportunities that happen in communities, with the Coalition, one of our emphases and efforts is to increase awareness of folks in multiple systems so that if there is a young person who presents some of the problem behaviors, there is an obvious avenue for intervention, whether it is through the faith-based community, through schools, you know, through parents. We say all the time through our Coalition to monitor closely, catch it early and make a big deal out of it if it happens. Pay attention to the behavior.

So many times, we have school personnel, we have faith leaders who—they do not do this every day, so it is not natural for them to pay attention and to refer it to a source who could do the official assessment or official intervention. So part of what we do is empowering all members of the community to understand this is an issue we must all take part in.

Senator REED. Thank you.

Anyone else?

Mr. ANTON. I think to build on what Dr. Weissberg said, I think our experience has taught us, especially early on with our work with the corrections system, the juvenile corrections system, that there are key risk and protective factors that can identify criminogenic behavior as well as substance abuse and mental health-related issues. Dr. Weissberg mentioned many of those, but I think we can always be looking at that, and we can be helping, through our systems, to be more collaborative around how that happens, because I think there are still—there is a lot of fragmentation, and I agree that, you know, primary care physicians, family physicians are a place where that can happen; however, very honestly, they do not always have the training they need to do this kind of work.

Having been on the faculty at a medical school for a number of years, I know how little they have as a focus on substance abuse and mental health issues in their training.

Senator REED. All right, thank you very much.

Thank you, Mr. Chairman.

Senator DEWINE. Good questions.

I have a couple of questions from Senator Sessions that I would like to ask the panel, and anyone who would like can respond.

Senator Sessions asks is there comprehensive information about how well drug treatment works; in other words, are the current treatment plans working, and if not, what can be done?

Who would like to respond?

Dr. Brown, I will start with you.

Ms. BROWN. Well, there are a number of agencies that are developing collaborative networks to evaluate the effectiveness of interventions for youth. And typically, what happens is that these are done in a—as I would consider it a somewhat disjointed fashion; that is, these are interventions for youth that are in one type of system or another rather than comprehensively across systems, distinctively for intervention versus for prevention.

With that background, there are a number of interventions for youth, some of which have been already articulated today, that have remarkable outcomes, outcomes that we would consider better outcomes than if we were treating major health disorders, diabetes or multiple sclerosis.

So I think these things need to be thought of in this broader context, that we have ways, and we have strategies to reduce alcohol and drug problems. Part of the key is dissemination; that is, empirically-validated interventions need to be optimally implemented in communities, and there is often a disjuncture there between what we know works and what actually is carried out in communities.

Senator DEWINE. Anyone else?

Yes, Mr. Anton?

Mr. ANTON. I think prior to the last 4 or 5 years, there has frankly been very little research on adolescent substance abuse and mental health issues that has proven to have much validity.

Senator DEWINE. Really?

Mr. ANTON. In my opinion.

Senator DEWINE. Really?

Mr. ANTON. In my opinion.

I think that we have seen an explosion almost of that research in the last 5 years, newer research that has really helped to identify model programs, evidence-based and science-based research programs. SAMHSA and Mr. Curie's department publishes a prevention model program manual that also includes prevention and intervention types of programming. Treatment programming is more and more being able to identify specific models of treatment that work effectively for different populations.

But that is all very recent, in the last 4 or 5 years. I mean, I think we are not—you know, especially on the adolescent side, I mean, I really believe that from a—you know, going back to the science to service piece that Mr. Curie spoke about, that is also very recent, you know, looking at connecting what happens in science to the everyday real world of what clinicians and programs have to work with on a day-to-day basis in the communities they live and work in.

And I think there has been tremendous progress in the last recent years to help that happen, and so, I fully support the continuation of that and hope the committee would, too.

Ms. BROWN. Senator DeWine, I would like to just highlight——

Senator DEWINE. Sure, Doctor.

Ms. BROWN [CONTINUING].——NIAAA, National Institute of Alcohol Abuse and Alcoholism approximately 6 or 7 years ago instituted a program to facilitate the development of interventions for adolescents with alcohol and drug problems. NIDA has a program that is a clinical trials network that focuses on adolescents as well. And so, there is research that is going on. It lags substantially behind the decades of research that we have on effective interventions for adults.

And so, it is really critical that we have sufficient funding for implementation in communities of interventions that we know are effective and for research in this area to promote the most optimally, to design and develop and refine interventions that are most optimal for youth.

Senator DEWINE. Well, let me thank you all very much. It has been a very good panel, very good session, and I think we have learned a lot, and we appreciate all of you coming in.

Thank you very much.

[Additional material follows.]

ADDITIONAL MATERIAL

PREPARED STATEMENT OF THE ALLIANCE FOR CONSUMER EDUCATION

The Alliance for Consumer Education (ACE) is a Washington, D.C.-based 501(c)(3) nonprofit foundation dedicated to advancing community health and well-being. It is comprised of a volunteer Board of Trustees who represent a unique blend of safety advocates, consumer groups, nonprofit organizations, public health officials and household product manufacturers.

Inhalant Abuse Education is the flagship initiative of ACE. In partnership with the American School Counselor Association, the Inhalant Abuse Prevention Program recently completed a six-State pilot education program. Elementary and middle school counselors provided Inhalant Abuse education seminars to parents, community leaders and other adult influencers. This year, a total of 25 States across the Nation will receive Inhalant Abuse Prevention kits to help empower parents to discuss the dangers of Inhalants with their children. The goal of the foundation's program is to increase awareness of Inhalant Abuse from 47 percent to 80 percent by 2007.

With recent data (June, 2004) from the Partnership for a Drug-Free America, we know that abuse of Inhalants has increased as much as 44 percent over a 2-year period, driven by fewer children seeing any risk in this dangerous behavior. New analysis reports that over the past 2 years Inhalant Abuse has increased by 18 percent (from 22 to 26 percent) among 8th graders and by 44 percent (from 18 to 26 percent) among 6th graders.

Honorary Chairman of the Alliance for Consumer Education, **US Senator Mike DeWine (R-OH)**, states, "There's a strong lesson learned from this recent data and that's the need to remain vigilant in addressing the threat of Inhalant Abuse among our children. Better tracking to document incidence and better outreach to educate parents about risks and symptoms are imperative, since the real impetus for prevention begins at home."

What is Inhalant Abuse?

Inhalant Abuse is the deliberate inhalation by "sniffing" or "huffing" of fumes, vapors or gases from common products for the purpose of "getting high." To achieve this "high," more than 1,400 household products are misused—products that are found under the sinks, in the cabinets, in the garage, and throughout the house. These household products are chosen because they are inexpensive, easily accessible and legal to purchase.

Inhalant Abuse is a less-recognized form of substance abuse than use of marijuana, club drugs, cocaine and others, but it is no less dangerous. Inhalant users can die the very first time, or any time, they inhale a substance. The number of children that are involved in this dangerous activity is surprisingly large. Nearly 26 percent of all eighth graders in the U.S. have experimented with some form of Inhalant—that's more than **2.6 million children.** In addition, the age of initiation to Inhalants is younger than that for any other substance, with reported cases of Inhalant users as young as 6 years old.

Reporting, however, involves some significant challenges, and as a result, the true magnitude of the problem can only be estimated at this time. Parents are often completely unaware of Inhalant Abuse, or they refuse to believe or admit that their child might be involved in this activity—*"Not my child!"* Emergency rooms and doctor's offices have no standard review criteria, or intake protocol, that helps determine if the problems of a young patient arise from Inhalant Abuse. This lack of knowledge, open recognition, and documentation of the disastrous results of Inhalant Abuse enables the problem to continue unchecked among our youth today.

Status

Who Uses Inhalants?

The 2002 Youth Risk Behavior Surveillance System Survey showed that race or ethnicity is not an indicative factor of Inhalant Abuse. "White" is listed as the predominate group abusing Inhalants (16.3 percent), but is closely followed by "Hispanic" at 15.2 percent. "Others" are listed at 14.5 percent, and "African Americans" at 5.8 percent.

As for gender differences, boys tend to have slightly higher use rates than girls (in grades 4 through 6 and 10 through 12). Between grades 7 through 9, however, girls and boys tend to use Inhalants at relatively the same rate. After 18 years of age, males are more than twice as likely as females to use Inhalants.

The survey also showed that **between 2000 and 2001, the number of people age 12 and older having used Inhalants at least once in their lifetime rose**

by roughly 1.5 million, to nearly 23 million users. This means that there are more Inhalant users than users of Ecstasy and OxyContin combined, but sadly, nine out of ten parents are unaware or are in denial that their children may have used Inhalants.

What Products Can Be Abused?

There are more than 1,400 products which are potentially dangerous when inhaled—things like typewriter correction fluid, air conditioning coolant, gasoline, felt tip markers, spray paint, air freshener, butane, cooking spray, paint, and glue—all common products that can be found in the home, garage, office, school, or as close as a neighborhood convenience store. A complete list can be found and downloaded from the ACE website that specifically addresses this problem—www.inhalant.org.

Listed below are some of the most common products that are used as Inhalants:

Gases	Solvents and Gases	Aerosols
Nitrous oxide	Nail polish remover	Spray paint
Butane	Paint thinner	Hairspray
Propane	Paint remover	Air freshener
Helium	Correction fluid	Deodorant
Ether	Toxic magic markers	Fabric protectors
Chloroform	Pure toluene	Computer cleaning spray
Halothane	Cigar lighter fluid	
	Gasoline	
	Carburetor cleaner	
	Octane booster	
	Fuel gas	
	Air conditioning coolant (Freon)	
	Lighters	
	Fire extinguishers	

Cleaning Agents	Food Products	Adhesives
Dry cleaning fluid	Vegetable cooking spray	Model airplane glue
Spot removers	Whipped cream	Rubber cement
Degreaser	Whippets	PVC cement

*Please note that this is not an all-inclusive list.

How Are Inhalants Used?

Inhalants are breathed in through the mouth or nose using various methods:

- *"Sniffing" or "Snorting"*—Inhalants can be "sniffed" from a container or sprayed directly into the nose or mouth.
- *"Huffing"*—A chemically soaked rag is held to the face or stuffed in the mouth and the substance is inhaled.
- "Bagging"—Substances are sprayed or deposited into a plastic or paper bag and the vapors are inhaled. Using a plastic bag may result in suffocation if the individual passes out and his or her nose and mouth are covered.
- Inhalants are placed on sleeves, collars, or other items of clothing and are sniffed over a period of time. This is a particularly popular method of disguising inhalation of gasoline fumes.
- Fumes are discharged into soda cans and inhaled from the can.
- Users inhale from balloons filled with nitrous oxide and helium.

To maximize the effect of the Inhalant, the substance is inhaled deeply and then several more short breaths are taken.

Why are Inhalants Dangerous?

When an individual, child or adult, inhales the chemicals in common products as described above, the concentration of the fumes are much greater than the maximum amount that is permitted by safety standards in industrial settings. Inhaled chemicals are rapidly absorbed through the lungs into the bloodstream and quickly distributed to the brain and other organs. Within minutes, the user experiences intoxication, with symptoms similar to those produced by drinking alcohol. With Inhalants, however, intoxication lasts only a few minutes, so some users seek to prolong the high by continuing to inhale repeatedly.

Short-term effects include: headache, muscle weakness, abdominal pain, severe mood swings and violent behavior, belligerence, slurred speech, numbness and tingling of the hands and feet, nausea, hearing loss, visual disturbances, limb spasms, fatigue, lack of coordination, apathy, impaired judgment, dizziness, lethargy, depressed reflexes, stupor, and loss of consciousness.

The Inhalant user will initially feel slightly stimulated and after successive inhalations will feel less inhibited and less in control. Hallucinations may occur and the user can lose consciousness. Worse still, he or she may even die. Please see *Sudden Sniffing Death Syndrome.*

Long term Inhalant users generally suffer from: weight loss, muscle weakness, disorientation, inattentiveness, lack of coordination, irritability and depression.

Regular abuse of these substances can result in serious harm to vital organs. Different Inhalants produce different harmful effects. Serious but potentially reversible effects include liver and kidney damage. Harmful irreversible effects include: hearing loss; limb spasms; bone marrow and central nervous system (including brain) damage.

Sudden Sniffing Death Syndrome

Children can die the first time, or any time, they try an Inhalant. This is known as *Sudden Sniffing Death Syndrome,* and while it can occur with many types of Inhalants, it is particularly associated with the abuse of toluene, butane, propane, and the chemicals in aerosols.

Sudden Sniffing Death is due to cardiac arrest:

- The Inhalant can force the user's heart to beat rapidly and erratically until he/she goes into cardiac arrest.

Death due to Inhalant Abuse is attributed to the following:

- *Sudden Sniffing Death Syndrome:* cardiac arrest.
- *Suffocation:* blocking air from entering the lungs when inhaling from a plastic bag over the head (huffing).
- *Choking:* inhalation of one's own vomit after Inhalant use.
- *Fatal injury:* accidents involving motor vehicle fatalities suffered after Inhalant use, falls while under the influence, fires due to the inflammatory nature of Inhalants, drowning accidents.

Signs and Symptoms

While several warning signs may point to occasional problems most teens or preteens experience at some point, don't be fooled. Parents and caregivers should know what specific signs may signal real trouble for a child.

Common Inhalant Abuse warning signs include:

- Drunk, dazed, or dizzy appearance.
- Glassy, glazed, or watery eyes.
- Behavioral mood changes.
- Slurred or disoriented speech.
- Lack of physical coordination.
- Red or runny eyes and nose.
- Spots and/or sores around the mouth.
- Unusual breath odor or chemical odor on clothing.
- Nausea and/or loss of appetite.

Chronic inhalant abusers may exhibit symptoms such as hallucinations, anxiety, excitability, irritability, restlessness or anger.

In addition, there are material signs of Inhalant Abuse that parents should be aware of. The material signs are important to note because some of the physical symptoms may not last a long time.

Material signs of Inhalant Abuse include:

- Traces of paint or other products where they wouldn't normally be, such as on face, lips, nose or fingers.
- Fingernails painted with magic markers or correction fluid.
- Pens or markers held close by the nose.
- Constant smelling of clothing sleeves.
- Hair scrunchies smelled repeatedly.
- Uncharacteristic problems in school.
- Numerous butane lighters, empty or partially filled, in room, backpack or locker.
- Chemical odors on the breath or clothing.
- Spots or sores around the nose or mouth.
- Gasoline, paint-soaked rags, or used spray paint cans in a child's room or other peculiar location. Hidden rags, clothes or empty containers of potentially abused products in closets, under the bed, or in the garage.
- Missing household products.

Preventative Steps

Studies show that strong parental involvement in a child's life makes a child less likely to use Inhalants. Partnership for a Drug-Free America studies have found **"if you talk to your kids about the risks of drugs, it is 36 percent less likely they will abuse an Inhalant."** However, parents are not talking to children about the deadly issue of Inhalant Abuse because many know very little about it and most do not realize that their children can die the very first time they try an Inhalant.

According to a research study by the Alliance for Consumer Education, Inhalant Abuse falls behind alcohol, tobacco and marijuana use by nearly 50 percent in terms of parental knowledge and concern.

Take a few minutes to educate yourself about Inhalant Abuse. Learn the behavior patterns and warning signs to watch for so you can talk to your children about this issue because parents can make a tremendous impact on the choices their children make.

1. Educate yourself about this issue

- Learn what products can be harmful if intentionally abused as Inhalants.
- Understand the long-term and short-term effects of Inhalant use.
- Learn what slang words are used to describe Inhalants.
- Learn the methods of inhalation and their more common names.
- Visit the various websites.
- Ask your pediatrician or family doctor about Inhalant Abuse.
- Talk with other parents about this issue.

2. Preventative measures you can take

- Discuss Inhalant Abuse with your child.
- Be aware of what your child is doing at all times, especially after school and on weekends.
- Know your child's plans and activities.
- Meet your child's friends and playmates.
- Reinforce age-appropriate peer resistance skills.
- Talk with your child's teachers, guidance counselors and coaches.
- Keep products stored safely away from young children.
- Talk to your child about the proper use of household products.
- Be clear and firm about risky behavior, set limits and consequences.
- Tell your child you love them and that their safety is your number one priority.

In conclusion, the Alliance for Consumer Education (ACE) would like to emphasize the need for increased education methods to stem the tide of Inhalant Abuse across the Nation. The statistics prove there is a "Silent Epidemic" of increased Inhalant Abuse among our youth today. We simply cannot turn away and permit new cohorts of children to enter school and be faced with the temptations to experiment with this dangerous activity. We believe that it is the responsibility of parents and caretakers everywhere to become educated about Inhalants and to talk with their children at age-appropriate times.

The Alliance for Consumer Education (ACE) stands ready to help with the education process and we look forward to working together with the subcommittee on this important issue. *For more information, visit the Alliance for Consumer Education at www.ConsumerEd.org or www.Inhalant.org.*

PREPARED STATEMENT OF MARY MELTON, PH.D. MBA

Mr. Chairman, thank you for the opportunity to submit written testimony to your committee regarding adolescent prevention and treatment issues. I also want to commend you for your leadership and compassion regarding the issue of Addictive Disorders.

In Ohio, the challenge for Addiction Professionals is always to do more with less. With adult clients, these forced economies make the work difficult, but not always impossible. For adolescents, the lack of resources is devastating. Ten years of my 31-year career in addictions and mental health were spent as the administrator of an adolescent treatment center that offered both residential and outpatient services. Over those years many of the adolescents who received services visited us to give us their thanks and to share their stories of success; these nearly always included jobs, and schools and, most meaningful to me, family reconciliations. They communicated clearly, that without the intervention and treatment services that they received from us, their lives would have taken a different path. They offered their gratitude for our ability and willingness to somehow understand that they both needed and could benefit from those services. Our faith in them gave them belief in themselves.

Still in Ohio, addiction professionals have to rely on a patchwork of Federal, State and local programs to meet the growing demand for prevention, intervention and treatment services for adolescents with alcohol, drug and other addictive disorders. It is unclear how many adolescents are served through public and private efforts and which of the available initiatives are best at meeting the needs of adolescents and their families. It is difficult to determine whether Ohio families know where intervention and treatment resources are located. In addition, we do not know how many requests for services are denied due to the lack of resources.**What is known is that there are not enough services or appropriately trained staff available to meet the needs and that each untreated adolescent grows into an adult with serious issues.**

There is a critical need for the Nation to devise and implement a coordinated effort to meet these challenges. There is a need for more adolescent prevention and treatment workforce training as well as a specific coordinated effort to deal effectively with this challenge in Ohio and other States across the Nation. One of the ways this could be accomplished is through regional adolescent prevention and treatment workforce development centers that would focus on such initiatives as (1) the development of an Internet-based system to collect data on adolescent alcohol and drug abuse treatment and prevention needs, challenge areas, available local resources, and gaps in care; (2) the development of additional education and training resources for the addiction professional workforce targeting adolescents; (3) the undertaking of a national assessment of randomly selected school-based programs in the United States that offer alcohol and other drug prevention initiatives geared toward adolescents; (4) a survey of randomly selected school districts to review common practices following the identification of use by a student. This assessment of services within school systems would determine the backgrounds, experience, training, certification, and continuing education needs of professionals who are working with a school-based population.

Federal support for a national initiative is warranted when one examines the national trends, statistics, and other factors that indicate a growing need to support the addiction professionals through better training, research, and data collection on adolescent related issues. If we do not address the issues and needs of adolescent prevention and treatment endeavors, we are ignoring the next generation of those suffering from alcohol and other drug addiction issues and the problems surrounding them.

The Problem on a National Level

- The Centers for Disease Control and Prevention (CDC) reported that more than two million youth in the U.S. have diagnosable dependence on illegal drugs and alcohol. The CDC also found that alcohol is associated with the three main causes of death for teens: accidents including motor vehicles, suicide, and homicide.
- The White House Office of National Drug Control Policy reported that more than 20 percent of adolescents have been drunk before the 8th grade.
- According to the latest Substance Abuse for Mental Health Services Administration (SAMHSA) Drug Abuse Warning Network report, from 1999 to 2000, total drug-related emergency department visits increased 20 percent for patients age 12 to 17 (from 52,783 to 63,448).

Adolescent alcohol and drug addictions do not manifest themselves the same way as these issues in adults. The physical, mental and emotional damage is lifelong and has a profound impact on their future. Addiction Professionals need to receive training designed to address those issues that are specific to adolescent intervention and treatment efforts.

I submit this written testimony to you today filled with gratitude and hope. Through the intervention and support of adults who cared, I was able to go from being a high school drop out, living on the streets, to being a professional person with four degrees and the opportunity to help other young people avoid a similar fate. I understand that it is never too late, that adolescents can change, that we have to help them and that the smallest of gestures in their lives can truly make the difference.

[Whereupon, at 11:42 a.m., the subcommittee adjourned.]

○